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The Citrus Industry

THE ONLY PUBLICATION IN THE WORLD DEVOTED EXCLUSIVELY TO CITRUS FRUITS

Issued Monthly

Representative of every interest—
Representing no special interest

VOL. 5, NO. 8 TAMPA, FLA., AUGUST, 1924 15 CTS. A COPY

The source of supply from which the exclusive hotels at Pinehurst obtained their BLUE GOOSE oranges and grapefruit last season is rightfully proud of the accompanying letter:

Pinehurst, Inc.

Pinehurst, N. C.

Written from
H. B. Emery
282 Congress St.,
Boston, Mass.

"I do not know that I have ever taken the opportunity of telling you how very satisfactory the fruit which you shipped our hotels at Pinehurst during the season has proved. I have done the buying at Pinehurst for a great many years, but never in this period have we had oranges and grapefruit of such satisfactory quality as these BLUE GOOSE ones. It is a great pleasure to have established relations with you."

"Yours very truly"
H. B. Emery,
Purchasing Agent.

Broadening Our Organization and Facilities That We May Better Serve You

Striving at all times to keep pace with the growing demand of the fruit growers and vegetable raisers of Florida for the highest grade of commercial fertilizers and superior field service, we have greatly improved our manufacturing and distributing facilities.

Improved conditions warrant us in anticipating a heavy buying of fertilizer this next season. To meet the increased demand we have made many additions and improvements to our numerous warehouses throughout the state. Complete stocks are now available and it is our purpose to give prompt service.

Several additions have recently been made to the personnel of our organization, both in the office and field service department, with the idea of giving more complete and better service to those growers who buy GULF BRANDS. These additions are:

MR. W. P. HAYMAN, a graduate of the University of Florida and for many years specializing in Horticulture, Chemistry of Soils and Fertilizer, who has rejoined the Gulf Sales force to succeed Mr. C. W. Lyons, resigned.

MR. C. T. MELVIN, who has had seventeen years' experience with leading fertilizer companies operating in Florida and other southern states, to be assistant to Mr. J. R. Woods, President of the Gulf Fertilizer Company.

MR. GEO. D. SLOAN, another graduate of the Florida College of Agriculture, formerly with the State Plant Board, fertilizer manufacturers and Horticulturist of the Lakeland Highlands Cooperative Assn., to be attached to our office force.

These gentlemen and others of our staff are at your service. We would have you regard our organization not merely as a source of supply but as your partners in business, extremely interested in YOUR success which is our success.

Our Field Service men stand ready at all times to give you helpful, dependable advice. You have only to call on them and in doing so place yourself under no obligation. We will appreciate the opportunity to be of service to you.

The Gulf Fertilizer Company

Warehouses:
Winter Haven, Bradentown, Frostproof, Lake Wales, and Stocks at other points

Citizens Bank Building

TAMPA, FLORIDA

There is every assurance that the Citrus Industry of this state is soon going to be on a firm substantial footing. The grower may expect fair prices for his product next winter and in the years to come.

The forward looking planter will therefore lay his plans to round out his acreage and right now reserve the choicest trees to insure his getting exactly what he wants.

"Glen Trees Grow"

Glen Saint Mary Nurseries Company

Winter Haven Florida Glen Saint Mary

Over forty-two years of Satisfied Customers has made this the largest Citrus Nursery in Florida.

Greater Performance from Franklin's

49 per cent Power Increase

Remarkable Getaway in Traffic

From 5 to 25 m.p.h. in 7.3 seconds

Snap into Normal Driving Speed

From 10 to 40 m.p.h. in 15 seconds

Reserve Power For Hills and Speed

190% steeper hills at 40 m.p.h. and 100% reserve power at this speed on the level. That means travel ability. All day with wide-open throttle—no loss of power. No cooling troubles under any circumstances. Adding 49% to the power of the Franklin air-cooled engine has accomplished great things. Today's Franklin is a surprise to old owners—a delight to new ones.

FRANKLIN

Telephone the Franklin dealer. You know or have heard that the Franklin is the best-riding, easiest-handled car made. This power increase makes it one of the most capable. Drive it over roads you know, and check your experience with anything you have ever had. If no dealer near you, send us a post-card.

OWEN-FRANKLIN MOTOR CO., Tampa, Fla.
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FRANKLIN MOTOR CAR CO., Orlando, Fla.

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The Solar Propagating Frame for Rooting Citrus and Other Sub-tropical Plants

By Walter T. Swingle, Physiologist in charge, T. Ralph Robinson, Physiologist and E. May, Jr., Plant Propagator, office of Crop Physiology and Breeding Investigations Bureau of Plant Industry

The propagation of plants by the use of cuttings is one of the oldest methods known. While almost the only method used with some important groups of plants, it is little used with others, partly because of the difficulties encountered as compared with producing new plants from seed. Many plants commonly supposed not to root from cuttings are readily propagated in this way if the right kind of cuttings are selected and given the right treatment. Recently more attention has been given to vegetative propagation, particularly of fruit-tree stocks, in order to eliminate the variability so apparent in a lot of unselected seedlings. Aside from the commercial advantage of uniform stocks it is highly important in certain types of investigational work, particularly with fruit varieties, that great uniformity in the stock be secured to make the results of the experiments trustworthy.

In the citrus group there is still another reason for resort to vegetative propagation. As pointed out in a recent paper, there are a number of the recently created citrus hybrids that possess special merit as stocks but which are few seeded or even almost seedless. Some of these hybrids come true from seed, such as the Rusk citrange and Thomasville citrangequat, while others, like the Eustis limequat, do not. Even in the case of hybrids like the Rusk citrange which propagate uniformly and without noticeable variation from seed (the unfertilized embryos of the seed being in effect buds from the mother tissue), there is a period when the small seedlings grow very slowly, and they may easily be stunted through improper care.

Not only do rooted cuttings insure uniformity of type and vigor, but where the improved methods recently developed are used practically a year's time can be saved in growing stocks to budding size, an advantage certainly sufficient to offset the additional trouble and expense of providing special equipment. Until recently it was deemed necessary for the best results that the rooting work should be carried on in a well-equipped greenhouse using steam coils to supply bottom heat. Fairly good results, however, had been obtained under favorable conditions by using a frame in which a deep bed of manure supplied bottom heat during the initial period, but this method could not be relied upon always, and the period required for rooting was greatly lengthened.

Selection of Cuttings and Methods of Handling.

The main point of difference between the usual methods and those devised by the writers is in the type of twig selected for the cutting. Instead of taking well-matured rounded wood of pencil size or larger with foliage removed (as usually advised in standard treatises), only slender twigs with leaves attached (medium soft wood cuttings) are employed. Frequently the terminal shoots are taken, though when these shoots are long enough they may be cut up into two or more cuttings 5 to 6 inches long. Such slender twigs should have reached a stage of sufficient maturity so that they are not soft, but they need not have become rounded and hard. The cuttings should be so handled that no wilting takes place between the time of removal and placing in the rooting bed. In the case of taking cuttings in the field, they should be clipped directly into a wet sack.

No leaves should be removed except one or two at the base of the cutting. Each cutting should be reclipped just below a node with a sharp thin-bladed knife immediately before inserting it in the rooting bed. In a greenhouse or elsewhere the humidity must be maintained at a high point to prevent

wilting at any time. This also entails close attention to ventilation and requires frequent applications of water in the form of a fine spray. The rooting medium should be fairly coarse sharp sand that will not readily pack, thereby preventing good aeration. A mixture of fibrous material, such as clean cocoanut fiber, with the sand gives good results, but ordinary leaf mold should not be used unless the whole mixture is first sterilized by steam heat. If the sand or any prepared mixture is to be repeatedly used it should be sterilized occasionally.

The rooting bed should be at least 6 inches in depth, preferably 8 inches, and the cuttings should be inserted to a depth of about 4 inches. They should be given fairly heavy shading at first, gradually allowing more illumination as they give evidence of having become established.

In a greenhouse where the temperature can be controlled through the use of steam coils the best results are obtained with most citrus varieties, hybrids, and citrus relatives by maintaining a soil temperature of 80 to 90 degrees F., with the air temperature somewhat cooler, 70 to 80 degrees F. Given such temperature conditions with the atmospheric humidity kept constantly high enough to prevent wilting, the tender growing shoot inserted in the rooting bed seems hardly to stop growing, at least only for two or three weeks necessary for the formation of roots. Usually within a month to six weeks most of the cuttings are ready to be potted and in a year's time can be grown to a size suitable for budding. Seedlings under similar conditions will usually require two years or more from the time of planting seed. This is because the seedlings soon exhaust the scanty supply of food stored up in the seed, and the few small leaves that have been formed elaborate only very slowly the starchy food indispensable for new growth. A cutting, on the other hand, with several full-sized leaves attached is able to produce by active photosynthesis carbohydrate plant food in abundance, thus permitting the rapid growth of roots and new leaves.

The lack of greenhouse equipment and the expense of providing such equipment have seemed serious objections to any widespread use of these methods, notwithstanding the saving of time and the uniformity secured by vegetative propagation. The use of steam heat has also made it necessary to do most of the rooting work in the cooler months of the year, largely necessitating almost complete suspension of this work in summer.

Frame Experiments.

To obviate this difficulty some experiments were made with frames deriving bottom heat from a deep bed of manure. Small experimental hotbeds for rooting citrus cuttings were constructed during 1922 at Washington, D. C., at Eustis, Fla., and at Lake Alfred, Fla., at the last-named place in co-operation with the Florida Agricultural Experiment Station at the Citrus Experiment Station. The results obtained, while encouraging, were not entirely satisfactory except for a few varieties which root very easily, such as the rough lemon, lime and citron.

Sunlight for Bottom Heat.

During the spring of 1923 one of the writers (Mr. Robinson) observed a rooting frame in use at Buena Vista, Fla., built by Charles H. Steffani, a propagator connected with the Plant Introduction Garden of the United States Department of Agriculture. This frame, of simple construction, made use of sunlight to furnish bottom heat and was being used successfully for rooting the softwood cuttings usually handled in greenhouses.

A somewhat similar contrivance was apparently first illustrated and described in the report of the Hawaii Agricultural Experiment Station for 1920. J. E. Higgins, at that time horticulturist at the station, appears to have been responsible for its introduction there. The original solar propagating frame (for such the Hawaiian contrivance seems to be) is described as follows:

This device consists essentially of a box, the major part of which is covered with a closely hinged glass cover. The remaining part of the box is covered with a 1 by 12 inch board through which holes are cut to admit the pots. These are dropped into the box as far as the rim. The bottom of the box may be zinc lined and filled with water to a depth of several inches, or it may be filled with black-painted bottles full of water. The sun's rays upon the water or upon the black-painted bottles through the glass cover generate a large amount of heat, which is retained by the water at an approximately uniform temperature throughout the night. The hinged top may be closed or opened slightly, according to the needs. The cuttings are placed in sand or other material in the pots, the bottoms of which are filled with broken rock or pottery to provide drainage. A frame, which is partly covered with cheesecloth, provides shade for the cuttings. Openings at the end permit free passage of the air and prevent the accumulation of heat in the upper part of the propagation box, where it is not desired.

The frame observed at Buena Vista differed in several important particulars from the one just described, providing greater capacity and at the same time being of simpler construction. The rooting bed of sand was raised about a foot above the ground, and sunlight was allowed to heat the inclosed space under this bed through two glass sashes sloping to the east and west from the bottom of the rooting frame to a point close to the ground. An important feature was the use of ¼-inch mesh wire forming the bottom of the rooting bed. Cement spread thinly over this screen wire prevented the sand from sifting through, but provided numerous small openings for drainage and aeration.

The rooting bed proper was covered by hinged sash. About 6 inches above the sash was placed a burlap canopy to furnish shade and moderate the heat. Pans of water were placed on the ground under the side sashes to maintain the humidity and in some degree equalize the temperature, retaining much of the absorbed heat durduring the night.

This form of solar propagating frame seemed to offer distinct promise for use with citrus cuttings, and accordingly in June, 1923, one was constructed along similar lines for a preliminary experiment at Washington, D. C. Figures 1 and 2 will give an idea how this frame was constructed. In this preliminary test only the simplest sort of a rooting frame was put together, with the purpose of demonstrating, if possible, that the device could be utilized at little expense by anyone having only fair ability in handling tools and some experience in propagation technique. Glass was provided on all four sides of the raised rooting frame, but this feature is not essential provided the glass area is sufficient. The glass surface for collecting heat should be, roughly, two to three times the area of the rooting frame.

The wire bottom of the rooting frame was covered with moss (instead of cement), permitting perfect drainage, aeration, and penetration of the absorbed heat from below.

The first rooting frame used was a small one, 30 by 36 inches, raised 12 inches above the ground, in this case a bed of clean sand. A hinged sash was placed on top of this frame, and a light framework supported a burlap canopy 4 inches above the sash.

The glass base extended 18 inches on all four sides, sloping from the base of the rooting bed. A shallow pan of water was placed under the rooting frame to maintain an even degree of humidity.

Rooting Test With Citrus.

On June 28, 1923, 189 cuttings (chief-

ly citrus) were placed in the rooting bed. The following extract from the greenhouse report (made by Mr. May) covering this experiment will indicate what results may be expected with average summer weather in the latitude of Washington:

These cuttings were put in on June 28 and were all taken up on July 30 (32 days) to note results. For the first 10 days these cuttings were sprayed two or three times daily; from then on until they were taken out they were watered only when the condition of the cuttings and the sand (ordinary river sand) seemed to require it.

No ventilation was given these cuttings except on the last four days before they were taken out. It should be remembered that this case was not air-tight, and there was always some ventilation through the cracks of the rough material of which it was constructed. These cracks seemed to furnish just about the right amount of ventilation to prevent these cuttings from becoming weak, as they probably would in a regular "sweat box." They also at no time showed any signs of wilting, although they were carrying considerable foliage, especially the lychee cuttings.

more Cleopatras and seven Microcitrus cuttings had rooted.

Figure 3 shows the character and extent of the root systems developed in 32 days, starting with small terminal twigs with leaves attached. Such plants need no careful hardening process, but are ready for potting or even lining out in nursery rows with judicious handling thereafter. In removing from the rooting bed, precautions should be taken to avoid injury to the tender roots. The cuttings should not be left in the bed longer than necessary to form roots 1½ to 3 inches in length. At this stage they will need to be established in a soil affording materials for development.

Non-Citrus Cuttings.

It will be noted that included in this first test were ten lychee and three avocado cuttings. At the time of the first examination no roots had appeared on any of these cuttings, though the shoots were still green and healthy and a few had calloused.

Both of these plants have previously been successfully rooted with steam bottom heat in the greenhouse, which led to testing them in the solar frame. The rooting of the lychee from tip cuttings had already been accomplished by Edward Goucher, of the

Table 1.—Results obtained by using a solar propagating frame for rooting citrus cuttings tested at Washington, D. C., June 28 to July 30, 1923.

C. P. B. No.	Variety	Number of cuttings				Remarks
		Rooted	Calloused	Not calloused	Dead	
7775-E	Milcrocitrus sp.	1	9	10	0	Condition good.
11338	Cleopatra Mandarin	7	8	-------	0	47 per cent rooted.
48010-M	Citrangequat	12	8	-------	0	60 per cent rooted.
11540-AE	Rusk citrange	20	-------	-------	0	100 per cent rooted.
11893	Cuban shaddock	20	-------	-------	0	Do.
11178	Citrus medica	20	-------	-------	0	Do.
11298	Kansu orange	18	2	-------	0	90 per cent rooted.
11630	Sour orange	20	-------	-------	0	100 per cent rooted.
1158	Sweet lemon	20	-------	-------	0	Do.
11643	Lychee	-------	2	8	0	Still green and healthy.
12037	Avocado	-------	2	1	0	Do.
	Total	138	31	19	0	

It will be noted that five lots of citrus cuttings gave 100 per cent of successful results. Not merely had they formed roots, but the roots were numerous, healthy, and in fact the plants were established. In only one lot of citrus (Microcitrus, No. 7775-E) was the showing poor in the time allowed, and this species is one very slow to start roots. With the Cleopatra mandarin (No. 11338) and citrangequat (No. 4810-M), those not already rooted were nicely calloused, indicating that with additional time most of them would strike roots. As a matter of fact, all these plants were replaced after examination, and when taken out on August 30 all but one of the citrangequats were rooted; two

United States Department of Agriculture, using a method which involves tying the cutting to a stick or plant label and allowing only the end of the cutting to come in contact with the surface of the rooting bed. This practice has been found to be an unnecessary precaution, provided the rooting bed is free from damping-off organisms and proper conditions of temperature and humidity are obtained. In fact, lychee cuttings have been repeatedly rooted in the same rooting bed with citrus cuttings and have given almost as good a percentage of successes as citrus plants, although for the best results the time required is usually longer and the temperature must be kept fairly high (80 to 90 degrees F.). The use of a slightly acid rooting medium, such as sand and leaf mold or peat, is favored for rooting lychee cuttings.

Notwithstanding the more exacting nature of these tender tropical plants (avocado and lychee), the final result was quite encouraging. The cuttings were replaced in the same rooting bed, and when re-examined on August 30, 1923, all the avocado cuttings were nicely rooted and starting growth, and two of the lychees had also formed roots. Seven additional lychee cuttings were calloused. The premature removal of these plants for examination on July 30 was a decided handicap, which may have influenced the results with the lychees.

In the annual report of the California Avocado Asssociation for 1919 and 1920, page 16, S. W. Jamieson makes brief reference to some experiments on the rooting of avocados from slips, using ether as a preliminary treatment, but this method does not appear to have been further developed. Generally speaking, the avocado has been classed by propagators as a plant not to be propagated from cuttings.

Cuttings have made very satisfactory growth in pots, though it remains for future trial to determine their suitability for orchard plantings. Since our first success, obtained during the winter of 1922-23 in the greenhouse bed at Washington, a few avocado cuttings were successfully rooted in a frame, depending on manure for initial bottom heat. This frame experiment was carried out during the winter and spring of 1923 at the Citrus Experiment Station of Lake Alfred, Fla., in co-operation with the Florida Agricultural Experiment Station, at the suggestion of one of the writers (Mr. Robinson), the actual rooting work being done by J. H. Jeffries, in charge of the station. In this experiment the cuttings were first induced to form a callus while attached to the parent tree by girdling growing twigs (about one-quarter to one-half inch in diameter) and were then removed to the rooting bed. The callus formed was in some instances notched to induce roots to start when it was found after two weeks that they showed no tendency to "break." Contrary to expectations, no roots started from the calloused portion, whether notched or untouched, but in a few instances a ring of roots was formed, starting just above the callus. The percentage of rooted cuttings obtained in this way was too low to be very promising. In the department's greenhouse work with avocados the best results have been secured with

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Why So Much Poor Citrus Fruit?

By W. R. Hardee, of Ft. Pierce, St. Lucie County, Florida

During the past three years I have been asked many times for my opinion as to why there is so much of our citrus fruit that is of second, third and fourth grade, and so little that measures up to the standard set for first class fruit as demanded by the leading packers and shippers and by those who buy our citrus fruits, be it the wholesaler, retailer or the ultimate consumer, who complains bitterly against the poor appearance and poor quality of some of our fruit.

To enter into all of the causes which bring to us the poor condition, both in appearance and in quality would take more space than any periodical would care to give, and at the same time bring on protests from all over the State, as there is such a wide variation of opinion as to the relative value of stock on which citrus should be budded, the character of soil, whether clean culture, semi-clean or no culture should be practiced—whether to spray or not to spray, also the question of fertilizing, which in passing, I wish to say is in my opinion, one of the vital factors to be seriously and scientifically studied, if we are to get the class of fruit which we will have to grow if we expect to keep our ledger balance free from red ink.

For the reasons above stated, it is too large and complex a subject to undertake to deal with as applied to the entire citrus growing sections of the State, for different sections have local conditions that do not exist in other sections, and a blanket opinion would not only be useless, but do the State much harm by and through the controversies and protests that would result.

This being true, I shall confine myself to that section with which I am reasonably familiar, and practically, if not quite entirely, to the class of land on which I am growing citrus fruits myself and of land locally of which I have first hand knowledge.

This limits my territory to that part of the East Coast lying within St. Lucie County and covering the lands from the North to the South line of the County and extending back so as to include those fine bodies of soil within the several drainage districts, as well as other lands not within said drainage districts, but which are adapted to citrus growing.

I am thus limiting myself to territory, as I believe by so doing, I can say that I know whereof I speak, although what I shall say will apply with equal correctness to other sections of the State where soil conditions are the same as in the territory above named.

Even within the limited territory to which I shall confine myself, there are quite a variety of soils on which citrus fruits are grown, but I shall devote myself largely to those heavier types from which in my opinion, the future successful and profitable growing of citrus fruits will have to depend.

My reasons for making the last statement above is based on my belief that a good deal of the citrus properties now planted and that will be planted on the decidedly thinner and lighter soils will ultimately go into the discard, for the reason that the best grade and best quality of citrus fruits cannot under any circumstances be profitably grown on a soil as deficient in natural fertility as some of it is.

It is true that groves on some of the poorer soils have made money for their owners in the past, but it was not because of the fruit grading up to first class quality, but for the reason that the quantity grown, did not give the purchasers the opportunity to pick just what he wanted to buy. The past two seasons, however, have proven to us what we will have to grow if we do not wish to be called upon to pay freight charges as was done in innumerable instances. this past season.

There is one word that spells success or failure in future citrus growing, and that word is —QUALITY— and this brings me to the re-statement of the fact that St. Lucie County has won Six consecutive State wide Blue Ribbon Prizes for citrus fruit, yet in spite of this fact, there is a great quantity of extremely poor citrus fruit grown and shipped out of the County, and while there will always be some, there is no sound business reason why a majority, as is now the case, should continue to be of the third and fourth grade, which spells loss to the growers.

The fact that this condition exists even in the Blue Ribbon County of the State to such an extent that it calls for a radical improvement in our methods, indicates that in other counties that the seriousness is more acute, although the causes sometimes differ from those with which we are having to contend on the class of soil under discussion.

One of the troubles is that we have been following the lines of least resistance, which if continued a little longer, will take what little resistance we have left entirely out of us—do you doubt it?

The above states conditions as they have been, and as they exist today, and the question is, what is the matter and what are we going to do about it?

We are forced to admit that we grow too much unsalable fruit, and the question is, why?

Some say that we cannot correct the trouble to any practical extent—I SAY THAT WE CAN, and in making that assertion I am going to state that some years ago many of the groves in St. Lucie County had gotten in a condition that caused deep concern to their owners: this was true of the section where I live, being in White City, which is known for its fine quality of fruit; yet a condition had become manifest which was growing in the appearance and quality of our fruit and in the condition of the trees.

I had been satisfied for sometime that the fundamental trouble lay in the lack of drainage, and at this point, I wish to say, that our land is a good quality of flat pine and cabbage palmetto, underlaid with clay at depths ranging from one to four feet—the ideal citrus land.

Because we had some main ditches through our section, it was contended that we had drainage, but when one imagines that a drainage ditch or canal within a quarter of a mile or even running along side of a ten acre tract is drainage, they have something to learn, for such a ditch or canal, even if it has sufficient depth

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The Florida Citrus Industry

At a recent meeting of the Winter Haven Chamber of Commerce, Mr. W. H. Mouser of Chase & Company gave a very interesting and instructive talk on the subject of "The Florida Citrus Industry." This subject was so ably handled by Mr. Mouser and he brought out so many important points that The Citrus Industry is pleased to reproduce the following extracts from his talk for the benefit of Florida citrus growers.

The past year has been a low price year for the producers, not only of Florida oranges and grapefruit but for growers of practically all farm and grove products throughout the country. Perhaps just one illustration will suffice.

About 700,000 barrels, 3,000,000 boxes and a quarter million bushel baskets of apples moved out of cold storage during April of this year. This is by far more than were marketed during April, of 1923, and yet the May 1st. 1924, holdings of barreled apples were 200 per cent in excess of the five year average and nearly twice as heavy as in 1923. May 1st. stocks of boxed apples were also twice last years and 90 per cent above average.

As an illustration of the apple market, Eastern Baldwins during the week ending May 20, 1924, were selling at $3.75 to $4.00 in New York against $8.00 to $8.50 during May of 1923. I cite these apple statistics to show what the growers of another product have gone up against this year. It should also be remembered that the heavy supply of apples and the low prices thereon, were factors which helped bring about lower prices on citrus fruit.

I could give similar information in connection with other fruits but will not take the time necessary to do so.

One cannot take issue with the statement that prices have been unsatisfactory. I, however, publicly made the statement in the meeting of growers and shippers which was held in Orlando on December 21, 1923, for the purpose of reorganizing the Growers and Shippers League of Florida that the low prices realized this season do not mean that the Florida citrus industry has gone to the dogs, and I take this occasion to most emphatically repeat that statement.

W. H. Mouser

I have been engaged in the selling of citrus fruit in California and Florida for 24 years and during that period have seen, both in California and Florida, years of low prices and years of high prices. Notwithstanding the low prices this year, we will again see years of good prices and probably years of high prices—also other years of low prices.

A grower of any product, in figuring whether or not the producing of that product is profitable must figure on his average results over a period of years. It is just as much a mistake to figure that one has a bonanza in his citrus grove simply because he has a year of high prices, as it is to figure that the growing of citrus fruit is a failure and a losing venture because one experiences a year of low prices.

What lesson can we learn from the season just past? In the first place, that success may make one careless. Several seasons of good prices, one following the other, may cause one, to perhaps overlook the extreme importance of producing quality. Because even ordinary fruit may during exceptional seasons sell at good prices, one may find himself devoting more thought to the producing of quantity than of quality.

Let us remember that the most important thing the Florida Citrus Grower can do is to produce fruit of good quality—fruit such as is wanted by the trade and the consumer.

When I say that we will again have years of good prices and that the growing of citrus fruit is going to be profitable in the future, I do not mean that the grower who fails to produce fruit of good quality is going to find it profitable. In fact, the grower who produces poor quality fruit, even if he gets quantity, will probably find the business unprofitable and the sooner the grower who, through fault of his own, produces poor fruit gets out of the business, the better it will be for himself and also for the growers who do produce quality.

The Goose which lays the golden egg can be killed. Most anything can be overdone. No manufacturer would increase his product blindly. Planting of citrus fruit in both Florida and California has been extremely heavy during the past few years and it is not at all surprising that thought to the fact that there is an we find ourselves giving considerable immense acreage coming into production within the next few years, in addition to an increasing production on the groves which have only commenced to produce within the last year or so.

Good prices on citrus fruit for several years resulted in many people overlooking the fact that seasons of low prices and losses had been experienced in the past. With visions of nothing but easy and continuous prosperity, thousands of acres of new groves were set out both in California and Florida as well as lighter plantings in several southern states. Promoters, seeing a harvest, went into the game heavily. It certainly is not fair or just to condemn the citrus industry because of this over-expansion. Perhaps the lower prices realized this season—even though not caused altogether by a large supply of citrus fruit (it should not be overlooked that this is generally a low price season on all fruit)—will result in calling a halt to the rapid setting out of new acreage.

All, or most, marketing agencies are working to increase the distribution of and the consumer demand for oranges and grapefruit. The increase in the consumer demand during the next few years will undoubtedly be great. At the same time we know that the increase in the supply, will also be great during the next few years—unless nature takes a hand and reduces the supply by freeze or pest.

Most businesses work in cycles The

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Can't Use Freight Cars as Stores

New Development Will Affect Bulk Fruit Shipments

By P. L. Waycoup

By the developments of the last two seasons the question of the shipment of oranges and grapefruit in bulk has come prominently to the fore. Recent action by the railroads indicates that the question may be even more considerably agitated when the next season opens.

Originally the earliest citrus industry in Florida was developed on bulk fruit shipments. These, however, were made by boats of relatively small tonnage from the vicinity of Green Cove Springs and St. Augustine prior to the Seminole War, and prior to the great freeze of the winter of 1835 which practically wiped out the budding industry, which had been begun by the Spainards at St. Augustine, and which had been more permanently developed by the English who had later settled at Green Cove Springs. In the absence of regular cargo boats, it is recorded in early writings, shipments of oranges from these settlements were carried by relatively small boats to Savannah and Charleston which at that time constituted practically the sole markets available.

In the later development of the modern citrus industry of Florida, both oranges and grapefruit have always gone to the markets as packaged fruits. The earlier shipments of oranges were all by boat to points along the Atlantic seaboard, chief among which always has been the city of New York. Still later when the railroads came to play their part Florida oranges went forward in packages because these earlier shipments were practically all in less-than-carload lots. In fact the freight rate structure on which Florida does business to-day had its beginnings based upon the shipment of oranges from points on the Peninsula to Jacksonville in less-than-carload lots. At Jacksonville the railroads were able to assemble solid cars of oranges for the balance of the trip. Barrels and bushel baskets have been used at times, but the Florida orange box was developed as the most practical package which could be created cheaply out of the raw materials most available.

By the time grapefruit was developed to sufficient commercial importance as to move forward in interstate commerce, the precedent had been so established that no thought was given to citrus shipments other than in the standard boxed form.

The shipment of oranges and grapefruit in bulk began to receive serious attention only since the close of the Great War, and was brought about in an effort to reduce the costs of laying fruit down at destination. Bulk shipments of oranges and grapefruit have increased year by year since that time until during the last season they began to assume rather important proportions. Indications are that under ordinary circumstances they might be expected to still further increase to some extent, for a number of persons have come into this business during this period and it has just begun to take somewhat definite form and to have its regular dealers, willing to devote their time to marketing fruit in this manner.

It must not be assumed, however, that this increase in bulk shipments has been confined to citrus fruits from Florida, nor has it been confined to citrus fruits. On the contrary there has been a corresponding if not greater increase in bulk shipments of apples and other fruits and vegetables which are capable of being transported in this manner without too great losses.

There has been a tremendous increase in the production of fresh fruits and vegetables in the United States within recent years. This would be sufficient to cause some readjustment even if the basis of high costs created by the war had not remained to puzzle and plague growers and shippers. At the Orlando citrus convention it was cited by a speaker that in 1918, when our Food Administration was urging us to consume all the fresh fruits and vegetables possible, in order that our non-perishable foodstuffs might be left for export, there was consumed by the people in the United States 130 pounds of fresh fruits and vegetables for each man, woman and child in the country. This is measured by the movement in interstate commerce of shipments of such character. Yet by the year 1923 the movement of such fresh fruits and vegetables had grown amazingly. For that year it amounted to 213 pounds for each man, woman and child in the United States, based eighty-three pounds per capita, or an increase of approximately sixty-five per cent over the shipment of fresh fruits and vegetables between the upon the 1920 census. This was an increase within a five year period of states in 1918.

When we add to this complication high costs for labor, for materials and for transportation it is no wonder that some attempt to cut costs, such as is represented by bulk fruit shipments, should be made.

The development of the bulk fruit industry has required, of course, the development of both shippers and receivers. In the beginning many who were interested in growing went themselves to centers of distribution and there received shipments of their own fruit and that of others from communities whence they came, and disposed of them in the best manner possible. Others soon saw what was being done and this effort was copied. Also there came into the field men who formerly had engaged in the peddling trade who saw in the handling of bulk fruit at destination a chance to occupy themselves profitably. This was alright up to a certain point, but certain complications were naturally bound to develop; and already they have developed to a point where it seems they must be considered important.

The receiver for a car of bulk fruit who intends to make sales from the car must unfailingly see that the car is parked in some location where it has a chance to attract sufficient attention and demand to enable making sales quickly and at a profit. That was relatively simple when only a few persons were attempting to engage in the business, but it is not so simple now. One of the first compli-

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Growing Our Own Bananas

By James H. Collins, in Scientific American

A sales manager in Detroit had a banana plant. It was the apple of his eye, his pride and joy, a Giant Abyssinian Musa ensete, that he had raised in a flower-pot from a baby bulb, and kept outdoors in summer and indoors in winter. The strangeness and grace of the exotic plant-creature fascinated him, and under his fatherly care it throve apace.

In Abyssinia, Musa ensete grows 30 feet high. In Detroit, it attained the magnificent height of two feet, and was the wonder of the neighborhood until one zero night when, left too close to a window, it froze to death.

Do you remember, as a kid, losing your first dog—or kitten? It was like that, and he never forgot. But he never had the heart to adopt another banana plant—until—

One day this sales manager found himself bound for Florida to take charge of a large land development being carried out near Tampa by a Detroit automobile king. Florida was new and alluring, with its citrus fruit, avocados, palms, sugar cane, velvet beans and strawberries in December. But most of all, he liked the banana plants that stood in every Florida garden, and traveling over the State to get his bearings, was astonished to learn how the banana was being neglected.

Last winter Florida raised so many oranges and grapefruit that the market was glutted, and prices fell below the cost of production and shippng. Florida has for years supplied the first strawberries of the season, around Christmas or earlier and the first peppers, tomatoes, beans, celery, lettuce, new potatoes and other vegetables. But despite the State's enterprise in specialty crops, the banana was not grown commercially—or only locally in a small way. The fruit was brought in by the early Spanish settlers from the Indies or Guianas, and for four hundred years has been a door-yard crop, supplying the family. Occasionally, when a Floridian found more bananas in his garden than were needed for home use,he took a bunch or two into town and sold them to a grocer, generally for a very satisfactory price, because the tropical banana, brought all the way from New York or New Orleans sold for seven to ten cents a pound. A few grocers had small commercial acreage, selling to nearby cities, but there was, properly speaking, no commercial banana industry in Florida nor in any part of the continental United States.

In competition with the tropical banana, those grown in Florida had two shortcomings. They were of dwarf variey, about half the size of fruit-stand banana and therefore not attractive to purchasers who did not know their fine quality. And being dwarfs, they did not yield the tonnage per acre the banana growers depends upon for profit.

In the great consuming markets of the North, people eat fruit principally by the eye, paying the best prices for size and color. A banana like the little "Lady finger" grown in Florida door-yards would quickly gravitate to the pushcarts of the East Side, and be sold with difficulty there, because it is no great shakes to look at. Have a little faith, however, peel back its yellow skin and bite into the ripe flesh, with the rich flavor of the tropical red banana, and you will discover something new in the way of a delicacy.

"Some day the great American consumer will learn to eat by flavor instead of size and color," reflected the Detroiter. "Then there ought to be a market for these dwarf bananas as good eating. But why are they small—can't Florida raise large bananas?"

He began by asking questions, talking with anybody who could tell him anything about bananas, particularly the hospitable "crackers" who had lived in Florida all their lives and knew many things not perceptible to the tourist or recent settler. He discovered that fine-flavored big bananas in bunches weighing 50 to 100 pounds and over, as attractive as any you ever saw hanging in a fruit dealer's window, could be grown in Florida. They were already growing there—his cracker friends took him out back and exhibited full sized Red Jamaica fruit on healthy plants, and gave him plants for his own garden. Florida bananas were generally small, not because nothing but the dwarf variety would grow there, but because the plants had degenerated, or were not fertilized or cultivated, simply growing like Topsy.

The northern greenhorn, Mr. W. E. Bolles, became a banana enthusiast. He got plants of several varieties and began growing them with regular cultivation and fertilization on his place near Oldsmar. Big bunches of fine-flavored fruit resulted, and they were raised at a cost that made it possible to compete with tropical bananas and clear a fine profit to the acre. Bolles grew so enthusiastic that he sent out letters calling a meeting of people interested in bananas, for the purpose of organizing a banana-growing association. On the day before the meeting an unusual rain and wind storm arose.

"If I hadn't been the one who set the ball rolling," he admits, "I wouldn't have gone to the meeting myself. But it was my duty to be there, and I persuaded a friend to go with me. As we drove into town, he said he had some shopping to do, and would come around after the meeting got started. Walking boldly into the hall, I found myself the only one there, and not another soul showed up the next half hour. Leaving the hall, discouraged, I met my friend.

" 'How's the meeting,' he asked.

" 'It's all over.'

" 'What did you do?'

" 'Unanimously elected the officers and adjourned,' I replied. 'I was the only person present.' "

"He laughed like the wild man of Borneo just come to town. But the disappointment didn't stop me. I got a president and vice-president by correspondence, and became secretary and treasurer myself and we carried on. That was less than three years ago. At the second meeting there were 20 people present, including a grower who had had long experience with bananas in the tropics. At the third meeting we had 50 people, and at the fifth meeting, last February, there were 400—and we expect 1000 Florida banana growers next year."

The banana grows upon what appears to be a palm tree with a fleshy trunk, but it is really an herb, with most of its structure well below the ground. The bulbs, roots and rhizomes are out of sight, and the spectator sees only the leaves and leaf stems which, united, form a so-called "trunk." On that account, the banana in Florida can be frozen down to the ground with little damage—a well mulched plant, set deep, will live through temperatures below zero, sending up new shoots or suckers to bear within twelve months.

Because the forty-odd million bunches of bananas that we consume in this country every year have all come from the tropics, except a small local supply, this fruit is popularly thought of as something that could not

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GROVE PROBLEMS FOR AUGUST

Timely Hints for Grove Work During the Present Month

Prune out dead wood and water sprouts. Avoid heavy pruning at all times. Cover all large cuts with a coat of grafting wax.

Get sprayer in good order for next month's work. Spread the brown fungus of whitefly.

Make plans for fall and winter grove planting. Do not place orders for citrus trees with firms in other states; this is dangerous and unlawful, and such trees will not be admitted into the state.

RAILWAY LABOR LEADERS AND THE FARMERS

Charging that the conference at Cleveland that nominated Senator LaFollette for president was dominated by railway labor leaders and that Mr. LaFollette is virtually their candidate, the Railway Age makes a novel suggestion in an editorial in its current issue.

"The railway labor leaders who sat in the conference organizing and directing it," the Railway Age says, "could adopt and carry out, if anybody could, a plan which would immediately make possible reductions of freight rates on farm products to the pre-war basis. The railway companies have never yet received a cent of the large increase in railway earnings which has taken place since 1916. On the other hand, the railway employees whom the labor leaders purported to represent in the 'progressive conference' received in 1923 in increased wages 58 per cent of the entire difference between the total railway earnings of 1916 and 1923. The total wages paid to railway employees in 1923 exceeded $3,000,000,000. Therefore, a reduction of 11 per cent in railway wages would be sufficient to wipe out the entire increase of $330,000,000 in freight rates on farm products in 1923 over 1916. If the railway labor leaders are so solicitous to help the farmer, why did they not cause the 'progressive conference' to adopt a resolution favoring a reduction of freight rates on farm products to the pre-war basis and an 11 per cent reduction in the wages of railway employees to pay the bill? The average hourly wage of railway labor is now 123 per cent more than in 1916. After being reduced 11 per cent it would still be 100 per cent more than in 1916. The average earnings of railway employees in the year 1923 were 83 per cent greater than in 1916. After being reduced 11 per cent they would still be 63 per cent more than in 1916, which would more than off-set the increase in the cost of living. The surest way to show one's sympathy with another is to help him at one's own expense.

"Remarkable as it may seem, however, in spite of the profound sympathy the railway labor leaders feel for the oppressed farmer they did not cause the 'progressive conference' at Cleveland to say a word in its platform either in favor of a reduction of freight rates on farm products or a reduction of the wages of railway employees as a means of making it practicable! The platform declares for the repeal of the Esch-Cummins act, but while that would necessarily involve abolition of the Railway Labor Board, which the labor leaders want, it would not necessarily involve reductions of freight rates, which is what the farmers want. It also declares for "public ownership of railroads with democratic operation"—in other words for the Plumb plan; and that is the main thing the railway labor leaders really are after. Of course, the labor leaders want a reduction of freight rates for the farmers if they can get it entirely at the cost of the railway companies. On the other hand, of course, they do not want it if any part of it is to be made at the expense of railway employees. Possibly they and Mr. LaFollette apprehended that if any substantial reduction of rates were made, it would be made largely at the expense of railway employes and therefore, decided it would be wise not to declare specifically for a reduction of freight rates until they could be sure at whose expense it was to be made.

"The nomination and candidacy of Senator LaFollette for president are intended mainly to promote government ownership of railways. The more the proceedings of the 'progressive conference' at Cleveland are studied, the plainer this becomes.

"We shall follow with intense interest the progress of the campaign of the railway labor leaders' candidate, Mr. Lafollette, among the western farmers. The western farmers want lower freight rates; and Mr. LaFollette is going out to ask them to join those who are getting most of the money derived from the advances in freight rates in electing him president. The railway labor leaders anticipate that under 'public ownership and demoncratic operation' they will be the real managers of the railways; and Mr. LaFollette is going out to ask the western farmers to vote for him in order that they and the rest of the public may buy the railways and then

turn them over to the railway labor leaders to run.

"The railway labor leaders and Mr. LaFollette certainly have wonderful confidence in the gullibility of the western farmer."

POOR PUBLICITY

The Citrus Industry cannot help the belief that Frank L. Skelly is right in saying that Florida suffered much loss last season from undue and unwise publicity in regard to the citrus situation. That the situation was bad, there is no question, but that it was made worse by heralding the news broadcast to be used for our own undoing by buyers in the distributing centers, is equally true.

Starting with a serious situation at home, growers and shippers alike made the situation worse by playing into the hands of buyers by exaggerating conditions and placing themselves in the attitude of begging for offers from buyers, when a little more backbone and a little less publicity would have brought the buyers to us with offers.

It is to be hoped that Florida citrus growers may not again be faced with the same situation which prevailed last season, but should such conditions prevail again, it is to be hoped that we have learned the lesson that unwise publicity is almost as bad as no publicity.

"MY KINGDOM FOR A PEAR"

"We never miss the water till the well runs dry!"

This is a truer saying than most of us realize.

The toper who "could drink or leave it alone," but who usually drank, did not realize the full extent of his appetite for liquor until the operation of the Volstead act left him without his "booze."

So it is that in Florida thousands of citizens who never realized that they had acquired the avocado habit until the embargo on foreign fruit robbed them of their early season supply of pears, are now yearning for their accustomed summer allowance of this delicious and refreshing fruit. Daily the fruit stands are beseiged by hungry patrons anxiously inquiring for ripe "pears," only to be disappointed. Eating houses daily answer hundreds of inquiries for service of this fruit with the information that none are to be had at any price. All over America, in greater or less degree, the same condition exists.

Why?

Because Uncle Sam in his wisdom has placed an embargo upon the importation of tropical fruits in the effort to prevent the introduction of fruit diseases and pests which threaten the American grown fruit.

So, while thousands of Americans suffer the deprivation of their accustomed summer "salad," the federal authorities are to be praised for their efforts to protect this infant American industry which is fast growing to sizeable proportions in Florida and California.

That the government authorities have taken the part of wisdom is shown by the increased plantings of avocado groves in the two states in which this fruit can be produced—Florida and California, and the increased profits being derived by American producers of the early fruiting varieties. While this year the season has been cut short by the exclusion of the earlier fruiting "pears" from Cuba and Central America, Florida growers are preparing to meet this situation by the planting of earlier varieties in their own groves, and within another year or two it may be expected that home grown fruit will take the place of the imported article in the summer months as it has previously done during the winter season.

There is no ill without its corresponding recompense. In this case the recompense will be seen in the encouragement of this new, but already proven, American industry, and in the greater profits derived therefrom by American avocado growers.

Viewing the situation in this aspect, the American consumer of avocados will reconcile himself to a temporary abstinence from his favorite fruit in the knowledge that in the years to come he may enjoy to the full and for a longer season the delights of the health-giving "pear."

CHILE'S FRUIT CROPS DAMAGED

The blight affecting the fruit trees in the Tacna fruit growing region of Chile has practically destroyed this season's crop of olives and oranges, Assistant Trade Commissioner Clarence C. Brooks, informs the Department of Commerce. Many of the small tenant farmers occupying the irrigated lands in the vicinity of the city of Tacna, who are dependent upon the returns of these two crops, are encountering financial difficulties while the restriction of their purchases to bare necessities has brought about a period of dullness in the retail trades. In 1923 more than five hundred quarter casks of olives were shipped to the United States, but the size and quality of this year's crop is such that it cannot be marketed abroad.

Present indications are that both the Florida and the California citrus crops will be materially less than last year. This should mean better prices, if the markets are not again poisoned by the shipment of unripe and unfit fruit.

No grower may hope to recoup last year's losses by niggardly methods in fertilization and spraying or dusting. It is the producer of quality fruit who will win in the end—and quality fruit can be produced only by healthy, well fed trees.

Fruit must be good in the first place, and look good in the second, if the grower is to realize the full measure of profits from his efforts.

Wise plantings of citrus groves will be profitable this year or any year. Unwise plantings are unprofitable at any time.

From all reports, Farmers and Fruit Growers Week at Gainesville is proving to be even better than last year.

Even the small grove has need of a truck and a tractor. Good trucks and tractors are now made to meet every grove requirement.

Cooperation Between Town and Country Communities

By Nathan Mayo, Commissioner of Agriculture

Transformations often take place around us so gradually as to be almost unperceived. We so soon get accustomed to changes that we take them as a matter of course and do not look into the remote causes that brought them about.

Various forces are working for the unification of town and country community spirit. Town people are running farms and country people are running business in town. This overlapping of business interests is the most recent of the potential unifying telephones, radios, consolidated agencies. Good roads, automobiles, schools and country fairs are among the more effective of the unifying forces.

The lack of homogenity that has so long exsited between town and country has been due in great measure to isolation of each in its material interests, its social life and consequently of everyday thought. Thought habit is a strong social force that cannot be ignored. The thought habit of town and country have kept them apart in so many ways as to create an antagonism in many instances not unlike that which exists between nations after they have been at war. If each could but see itself as the other sees it the viewpoint of each would be changed. In the language of Robert Burns—

O, wad some pow'r the giftie gie us
To see oursels as ithers see us!
It wad frae monie a blunder free us,
And foolish notion.

As a rule the man in the city buys his living and the man in the country raises the necessaries of life. The city man thinks of the cost and the country man does not. The country people like to have barbecues and basket picnics and invite "everybody" to come out and help themselves. City people accept the invitation and enjoy it—but don't bring baskets. Who ever heard of the town or city having free barbecues and inviting "everybody" unless there was some selfish scheme back of it? The writer has known a few instances where candidates for office and business men chipped in and made up the requisites for a general barbecue. But I am talking of a real neighborly, good fellowship barbecue with nothing in view but a good time.

Nathan Mayo

The countryman thinks of this frequently.

Suppose a man in the country and a man in the town are well acquainted: the man in town happens to stop at the front gate or in the big road at the end of the corn rows where the man in the country is plowing; they stop and talk a few minutes and the dinner horn blows. The farmer will ask and insist on the city man coming in and have dinner. It is not just for manners either, he means it.

Suppose this same farmer happens to meet the same city man in the town and stop and pass a few words and the clock strikes twelve—what happens? The city man will slap the farmer on the shoulder and say: "Well, come round and see me; if I can do anything for you call on me." Each goes his way.

The farmer thinks of this often.

Human nature is the same in people of all vocations. The difference of viewpoint is due to environment.

Take advertising: The commercial man is used to advertising: the farmer is not. A county fair is mostly an agricultural exhibit. It is seldom conducted exclusively by farmers. It is a good place for town and country to fraternize and enjoy themselves. It is a good chance for town people to divide up the country and have each town man to take one or more from the country and invite him to the fair and to dinner on a certain day at his expense. The people in the country could do the same thing for the people in the town. This offers a means for developing a real comradeship.

Where there is a Kiwanis, Rotary, Exchange, Board of Trade or other civic organization why not invite a farmer once in awhile to meet with the members and give a talk? Others are invited frequently. Because a man has no reputation as a hot-air artist is no reason why we should conclude he has no brains or ideas worth while.

The farmer thinks of this frequently.

When newspapers cartoon the farmer he never looks like "Country Gentle man" but like a scarecrow, why?

The farmer thinks of this often.

The personal equasion is the strongest force in society. Personal contact will knock off antagonisms when nothing else will. The long-arm, "I am holier than thou" attitude will never lead to cooperation. If it leads anywhere it will be toward feuds. If you are friendly with people only when you want something, you are raising a barrier between yourself and others as impassible as the wall of hate between France and Germany. Any one who has lived long has seen some of this, if he has not experienced it.

Rural life in America is quite different from rural life in Europe. There the rural population live in villages and go out to their farms to work—often miles away. The isolated farm house would be as much of a curiosity there as a rural village—with no semblance of a business town—would be in this country. The records show that this village life has not contributed to their culture or morals. Our way is the better, but we need the community spirit and our means of transportation and communication make it possible. Cooperation is coming and we should encourage it in every way possible. AND PRACTICE IT EVERY DAY.

How to Ship Your Produce to Get Better Prices

By Tom Delohery, Associate Editor of Farm and Fireside

In this article I am going to tell you a few of the outstanding things I learned about produce markets in general from the leading traders on the South Water Street market, Chicago. These same principles hold good no matter what market yau patronize, or if you sell your goods at a roadside stand in front of your farm. It is useful information for the car-lot shipper, as well as for the farmer who makes but a few small consignments.

After studying the situation carefully the thing which impressed me most is the fact that your growers and shippers of fruit, vegetables and produce are losing millions of dollars every year by neglecting to grade for quality, by failing to use proper packages, and by patronizing dishonest dealers. Commission men and jobbers take the stuff you ship in any shape or form, grade and repack it according to market requirements, and make money despite high-priced city labor. You can do the job just as well and most times at a lower cost.

Of the two, I believe quality is the most important, but packing is not very far behind it. A good package will attract a buyer even though the stuff is poorly graded; and a poor package often cuts the value of quality merchandise.

"It used to be that there was not much difference in the price of No. 1 and No. 2 grades of produce," said R. S. Headley, general manager of Wayne & Low, one of the leading Chicago produce commission firms, "because people knew how to prepare the undergrades and make them tasty. Apparently they have lost this art, as the demand today is for the best that can be had.

"For example, take one of our egg customers. He insists upon fresh eggs when storage eggs would serve just as well, and save a lot of money. Storage eggs are frequently of better quality than the fresh eggs. This is true in October, when production is low. It stands to reason that storage eggs, handled properly, are a much better product than 'fresh eggs' which have been a month in some warehouse. The storage eggs are stamped and the others are sold as fresh. This is the only difference, but I can't make our customers see it in the same light."

Another South Water Street firm had an experience which illustrates the value of proper packing. Twenty-five barrels of radishes were shipped from Arkansas. The grower packed them loose in sugar barrels without ice. They were refused upon arriving because the leaves had wilted and had turned yellow. The radishes were in fair shape and could be eaten, but they were turned down on account of the leaves. Few people eat the leaves of radishes, yet no one will buy them when the leaves are wilted or yellow, even though the radishes themselves are sound.

Down in southern Illinois the standard pack for pieplant is a 30-pound box. On the Chicago marget this will bring more money than twice as much pieplant shipped in an orange box, for instance. In the district around Chicago some fine cherries are produced. Some growers pack them in bulk and ship in veneer baskets. The trade will pay more for fewer cherries if they are put up in pint and quart containers and packed in small, attractive crates. The reason for this difference in price, despite the quantity, is that buyers are afraid that the bulk cherries might have been damaged on the way to market. They know from experience that the crated boxes will stand a lot of handling before the fruit is hurt.

Approximately 50 per cent of the fruit and vegetables received at Chicago is re-shipped to other markets. It is plain, therefore, that unless goods are packed in proper containers they do not get any of the shipping demand, and the lack of competition very often affects the price. I believe this same thing is true on other large markets.

Another way of getting more money for your produce is to have it on the right market. By this I mean that perishables which arrive Saturday have to be held over until Monday at a great expense, or sold to shipping buyers at a reduced price. The retailers and city buyers have all their marketing done before Saturday, except for some few highly perishable products. Consequently shippers are the only market open for late arrivals, and, with no other buyers, they insist on radical reductions before they will trade.

These are a few of the reasons for the wide difference in what you receive and what the consumer pays for produce. Not all this margin is clear profit to the dealer. He spends a big share of it in putting the produce in shape for the market. In the basement of one of the biggest traders I found a dozen men cleaning, trimming, and washing celery. Two other men were trucking in big loads of it; and two more were loading the discarded leaves and stalks on a big truck on the street. The refuse had to be hauled 15 miles to the dump.

Rents are high on South Water Street. This basement undoubtedly cost more than a farmer would make on a good section of land. The men earned at least $5 a day, and five-ton trunks are not bought or operated for a song. Farmers pay all of these bills because of neglect or ignorance.

Better try the local market just before shipping to a big market center. If you decide to ship, it is very important that you select a reliable commission merchant who handles small as well as large consignments of produce. If you don't know a good dealer, your local banker may be of great help in putting you in touch with one who is competent and honest . If your banker doesn't know of a good commission man, he can find this out from the institution at a terminal market with which he does business.

Never ship to a commission merchant unless you are sure he is reliable. I say this because many of the best firms have quit the small consignment trade, claiming that 65 per cent of it is handled at a loss, and that they can make more money in car-lot shipments with half the trouble. As a result, many dishonest traders have gone into the small trade, who either shade the price on your produce or make no returns at all.

After you have received the names of one or more firms, better sit down and write a letter to each one, asking general trade news: if the produce you have to sell will bring as much on that market as it will on a nearby point, when is the best time to ship, what grades are wanted and what

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The Origin of the Maltese Blood Orange

By Edward M. Holmes, Emeritus Curator, in the Pharmaceutical Journal, London, No. 3164, Vol. 112, June 4, 1924

Pharmacists are often (especially if they are known to take an interest in plants) asked questions that are very difficult to reply to satisfactorily, but which it is sometimes wise to answer if it is desirable to maintain their reputation for being scientific men. A question of this kind, put to Mr. Hirst, of Scarborough, as to the origin of the blood orange was answered correctly by him, but was contradicted by the editor of a floral magazine, who ought to have known better than to quote the antiquated idea of that fruit being the product of a bud of the common orange grafted on a pomegranate, an idea which was exploded as long ago as 1818 in Risso and Poiteau 'Histoire Nat. des Oranges.' Mr. Hirst asked the Editor of the Pharmaceutical Journal for an authoritative opinion on the subject, who referred the question to me, and asked me to ascertain and report whether the actual origin of the fruit was known. I therefore attempted to solve the riddle, but found on application to various botanical and horticultural centres in this country that practically nothing was known of its origin. It was a point of interest, therefore, to obtain an opinion from English botanists who have lived in the East. to find out if the blood orange originated in Malta or had been imported from an Eastern country, since oranges were first brought from the East. According to Professor Targioni, the fruit of Citrus Aurantium was first brought into Arabia from India in the ninth century A. D., but was unknown in Italy in the eleventh, but was shortly afterwards carried there, as it is said that St. Dominie planted an orange for the convent of St. Sabina, in Rome, in the year 1200, and in the fourteenth century both oranges and lemons became common in several parts of Italy.

Inquiries made of botanists who resided in the East during the last half-century show that the Maltese blood orange did not come from India or Malay.

Sir George Watt, C. I. E., in the 'Commercial Products of India,' writes of the Malta or Portuguese blood orange as introduced from Malta into India as late as 1852, although there existed more than one red orange in that country, e. g., one known as "Lallada," of red Mandarian orange, and another known as the "Santara," a name generally accepted as an Indian corruption of Cintra, which would indicate that it was probably introduced by the Portuguese. The fact that the blood orange is not found on the eastern side of India might justify the assumption that it did not come from China, although the best oranges in India, which are found on the Khasya Hills, are universally regarded as of Chinese origin. In his opinion, the only Citrus that can be accepted as indigenous would be C. Medica, and not C. Aurantium.

Mr. H. N. Ridley, C. M. G., who was for some years Director of the Botanical Garden at Singapore, of whom I also inquired if he knew anything of the origin of the Maltese blood orange, told me that it did not occur in the Malay peninsular, and that it did not appear to be of Chinese origin. If it had been, he would doubtless have heard of it from some of the numerous Chinese horticulturists in that country. But the blood oranges sold at Singapore were said to come from Malta. It is clear, therefore, that the Malta blood orange did not originate in Clina or India.

I also wrote to the superintendent of the celebrated Hanbury Gardens at La Mortola, near Ventimiglia, where at least fifty-four varieties of Citrus are cultivated, but he referred me to the Director of the Argotti Botanic Garden at La Valetta, Malta, for local information, and to Messrs. Rivers, fruit growers, of Sawbridgeworth, England, who cultivate many species. The latter wrote me a very interesting letter, pointing out in reply to my inquiries that the petiole of the leaf of the Malta blood orange is narrow, and that the petals are white and similar to those of C. Aurantium and the stamens are twenty in number, and that the stems are spineless both in young and old plants, but the leaves are somewhat rugose and curved from petoile to tip, and that the Maltese (egg) blood orange, the Maltese oval orange, and the Jaffa orange seem closely akin, resembling each other in habit, leaves, and pale buff-coloured pollen, the pollen being golden in most forms of C. Aurantium, but white in the navel oranges. The blood colour, he finds, is not constant, for of three oranges in a bunch two may have it and one not. He also mentions that other blood oranges than the Maltese are grown in America, viz., Ruby, Sanford Blood, Saul Blood and St. Michael Blood.

But it was from Dr. J. Borg, M. A., the superintendent of Agriculture in Malta, that I obtained the fullest and most authentic information. He kindly forwarded to me his work on 'The Cultivation and Diseases of Fruit Trees in the Maltese Islands," published as late as 1922. This he accompanied with a most informative and authoritative letter, in which he pointed out the following statement on p. 45 in his work:

"The Malta blood orange is in all probability a local seedling sport of the ordinary orange, but its origin is wrapped up in mystery. As it was described and figured in Risso's natural history of the orange tribe it was therefore well known and widely cultivated before this time (1818). The opinion so often expressed by popular writers that it is due to a cross with the pomegranate is, of course, altogether untenable." Dr. Borg adds: "We know for certain that the blood orange now extensively cultivated in Sicily, Tripoli, etc., has been originally imported from Malta not more than sixty years ago. It has found its way to India, South Africa, Australia, America, etc. There is, however, no record in Malta concerning its origin, and I am very much inclined to believe that it is a local seedling sport, the blood being due to our red soil rich in iron. It is now, however, a very stable variety, and even if cultivated in soil comparatively poor in iron oxides, the red streaks of flush of blood in the pulp and in the rind are permanent, and are sure to make their appearance at complete maturity. My be-

lief that it is a natural seedling sport due to our soil is substantiated by the fact that even the Bahia or seedless orange is "bloodless' when over less orange is "bloodless" when over shows streaks of "blood."

"The tree of the Malta blood orange differs from that of the ordinary orange by its darker green foliage, and is often spiny, the last character being, as it were, a certificate that it originated from seed."

It is probably not generally recognized that there are two well-known forms of blood orange cultivated in Malta and occurring in commerce.

The Malta Blood Orange

1. This is the ordinary round or slightly flattened orange with a deep orange peel, which in December begins to take on the characteristic blood colouring, at the same time the pulp becoming heavily streaked blood-red, and later the colouring pervades the whole pulp, particularly its lower half. The fruit keeps well for a long time, and travels well. This is the original Maltese blood orange. The Maltese name is **Laring taddemm.**

2. The Malta egg-blood orange, which is distinguished in Malta as **Laring tuil taddemm, touuali,** or **fin taddemm.** This is considered a very superior fruit, and its origin is well known. "It originated as a sport in a small orange grove at Casal Balzan (Malta) on a tree of the Malta egg orange towards 1850, and the sport was fixed and perpetuated by budding."

Dr. Borg knows the small garden where the original tree existed, of which one big branch has sported in this way. The leaves are usually curled and wavy, as in the egg oranges generally, but usually somewhat smaller. The fruit is generally oval or elliptical, or rarely roundish, the pulp and rind less heavily streaked and flushed red than in the Malta blood orange, and the blood makes its appearance in January, a month after its first appearance in the Malta blood orange. This variety has been also repeatedly exported, and is now grown in most countries where the orange is cultivated.

The fruit is middling or large, oval or elliptical, rarely roundish, the peel is usually thin and smooth, but may be rather thick on trees situated in the shade. The pulp has few seeds, occasionally only one, a delicately sweet and acidulous flavor, and a distinct aroma. It is at its best in February and March, but is then too ripe to travel well. The egg-blood orange is generally considered the best of the Maltese oranges, and is now largely planted in preference to the other varieties. Until a few years ago thousands of young trees were annually exported to other countries bordering the Mediterranean, as well as to America, India, Australia, South Africa, etc.

Both these varieties of the Maltese blood oranges occur in British commerce. The original Malta egg orange, from which the egg-blood is a sport, is sometimes called the Portugal orange, and was introduced into Malta during the rule of the Order of St. John towards the close of the sixteenth century and in all likelihood from Portugal by Portuguese knights. The ordinary round orange, of which Dr. Borg considers the Malta blood orange to be a seedling, is known to have been cultivated in Malta for centuries before the advent of the Knights of St. John. In fact there were ancient groves of this orange as far back as the fourteenth century, and in all probability it was introduced into Malta from Spain.

The Seville or bitter orange is of greater antiquity, and was probably introduced into Spain by the Arabs in the ninth century. There are, of course, other blood-flushed or blood-streaked oranges, such as the **Citrus heirocanthicum,** etc., but none of them was ever cultivated in Malta, so that the blood Maltese orange cannot be due to hybridisation. The Shaddock, **C. decumana,** which has a heavily streaked red variety, was only introduced into Malta in 1890."

The occurrence of a red flush in other fruits is well known, such as in the Winesap apple, the near **Pyrus sanguinale,** the blood peach, and the Waterloo strawberry, etc., but the colour of these does not appear to be affected by the soil.

AGRONOMIST

Receipt of applications will close September 2. The examination is to fill vacancies in the Bureau of Plant Industry, Department of Agriculture and in positions requiring similar qualifications, at an entrance salary of $3,800 a year. Advancement in pay may be made without change in assignment up to $5,000.

Applicants must have been graduated from a college or university of recognized standing, and have had at least eight years' additional training and experience in investigation, extension, or administration in cereal production or soil management or both. Each year of graduate study involving major work in agronomy will be accepted in lieu of one year lacking in the required experience. Such substitution, however, may not exceed two years.

The duties of the position are to assist in investigations in cereal agronomy, including crop production and soil management; to plan and execute research along these lines; and to exercise supervisory functions in connection with such activities.

Competitors will not be required to report for examination at any place, but will be rated on their education, training, and experience, and writings or publications of not less than 5,000 words on some phase of agronomy to be filed with the application.

Full information and application blanks may be obtained from the United States Civil Service Commission, Washington, D. C., or the secretary of the board of U. S. civil-service examiners at the post office or customhouse in any city.

CITRUS GROWING ROUSES INTEREST OF LAREDO FOLKS

Laredo, Texas.—Started by residents of this city as something of a hobby and for recreation a few years ago, citrus growing in this part of Texas now is receiving serious attention. The few trees set out to see what they would do on the lawns of residences now are bearing and those who took part in the experiment have their own grapefruit, oranges, lemons and tangerines. When hungry for citrus fruit in the fall as it ripens they simply step out of their houses and help themselves.

Five to seven year old trees were loaded with fruit last year and this year the prospects are good for a fair yield. The small town groves have become the pride of their owners and receive careful attention. The trees also are a source of much local pride to their owners and are pointed out to visitors.

Many kinds of oranges are grown in Laredo. Last year some of the residents had much more than they could use themselves and the surplus was sold in Laredo or shipped to friends.

The success of the home orchards has caused plans to be made for larger groves and further experiments with the commercial end in view.

Gulf Fertilizer Company Enlarges Organization and Improves Shipping Facilities

Perhaps one of the best known fertilizer companies in the state of Florida is the Gulf Fertilizer Company, of Tampa. Organized in 1907 by L. R. Woods, its president, it has been steadily progressing and its growth and success are the natural outcome of the untiring energy and personality of Mr. Woods and his associates.

The Gulf Company was founded upon the idea that a company can succeed to just the extent that it meets the needs and problems of the people it desires to serve. This idea very soon developed into an ideal—a definite goal—and the present standing of the company, as compared to the other industries of the state, bears silent yet eloquent witness to persistent effort and successful execution of this ideal of service. The constant effort has been to improve the quality of the products manufactured and better the methods of service for the growers.

By steadily improving shipping facilities, the Gulf Company is now one of the most modern in the state. Experienced and capable employees handle the manufacturing and shipping, not just as employees, but with a personal interest in their product and in the people who use the result of their handiwork. Another indication of the work Mr. Woods has done, is the feeling of pride and harmony among those who work for the Gulf organization.

The Gulf Company sales force is made up from start to finish of men who have had a complete technical training. A thorough schooling in the Gulf factory is required in addition to their knowledge of such subjects as horticulture, soil chemistry, entomology and plant pathology. The factory course adds to this instruction, insecticides, spraying and dusting, including complete knowledge of the machinery used for such purposes. It is thus that a grower may feel satisfied that he will receive dependable advice and service from men so competently trained.

During the past few years under the able supervision of Mr. Woods, the Gulf business has grown to such an extent that it is expedient to broaden out and generally enlarge the organization. This move also means that the company is extending its facilities to cover the increased business so that the ability to render service shall not become impaired. With this idea in view the company recently made the following additions to the Gulf organization:

C. T. Melvin

C. T. Melvin, joined the Gulf forces on June 1st, of this year, as assistant to the president, Mr. Woods. Mr. Melvin has had 17 years experience in the fertilizer business and all of its various branches. For ten years he was associated with the American Agricultural Chemical Co., and for 5 years with the Virginia-Carolina Chemical Co., while in the immediate past he was Division Sales Manager for that company at Jacksonville.

Mr. Melvin's experience covers Virginia, North and South Carolina, Georgia and Florida. He states that it is his idea to assist Mr. Woods in developing to a greater degree the policies of the Gulf company which have been so very successful in the past, and to maintain and extend the personal relationship between the company, its employees, friends and customers.

The most recent addition to the Gulf Company is George D. Sloan, who will be attached to the office force. Mr. Sloan completed his course of Horticulture in the College of Agriculture, of the University of Florida, Gainesville, Florida. Graduating in 1919 Mr. Sloan was for three years with the State Plant Board, after which he spent another three years as managing horticulturist for the Lakeland Highlands Cooperative Association of Lakeland, Fla. In the immediate past Mr. Sloan has been horticulturist and assistant to the Division Manager of the Virginia-Carolina Chemical Co., Jacksonville. Mr. Sloan is a recognized authority on citrus and general crop conditions in Florida and has a large following of friends throughout the state. It is stated that he is a welcome addition to the Gulf family and Mr. Sloan says that he shall be greatly pleased to serve the company and its patrons.

In the field sales force, W. P. Hayman has succeeded C. W. Lyons. Mr. Hayman has had considerable experience with citrus groves all of his life He is a graduate of the University of Florida, B. S. degree in Agriculture, specializing in Horticulture, Chemistry of Soils and Fertilizer. Immediately following his graduation, Mr. Hayman entered the World War and served Uncle Sam eighteen months, and still holds a commission as Captain of Field Artillery in the Officers' Reserve. Following his discharge from the army he became associated with the Gulf Company, and took a full course of factory training in the manufacturing of fertilizer and insecticides. From the factory he went to Winter Haven where he succeeded L. P. Kirkland in the inspection of groves and recommendations of fertilizers. After Mr. Kirkland resigned in June, 1920, Mr. Hayman was given full charge of the Gulf Company sales force in Polk County, at which work he continued until July 1923. Mr. Hayman resigned to take charge of the business of Chase & Co., in that section. However he has recently re-joined the Gulf organization and will be located at Tampa. The company states that it is very much pleased to have Mr. Hayman again in its ranks and feels that he will be able to render much valuable assistance to the organization and public.

The summer months of the year is the time in which fertilizer activities generally slacken, and the Gulf Company states that they have taken advantage of the lull to make repairs

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GROWING OUR OWN BANANAS

Continued from page 11

be raised within our own borders. As a matter of fact, there are reasonable probabilities of growing bananas commercially not only in all Florida, but in southern Louisiana and southern Texas, and the plant can be made to fruit in southern Georgia and California. Bananas are grown for ornament, attaining nearly normal size without fruiting, as far north as North Carolina, and Bolles says the plant can be set outdoors in every northern State in May or June and through cultivation and fertilization, brought to a height of 10 or 12 feet before frost comes. If the stock is cut off after frost, and the roots covered with a thick blanket of earth, straw and packing, there is a good chance of carrying the roots through a northern winter. These plants, of course, are purely ornamental, bearing no fruit.

His experiments with a dozen different varieties indicate that three are best suited to Florida—the Cavendish, Hart and Orinoco.

The Cavendish is sometimes called the Dwarf, Chinese or Canary Island banana, being the variety grown extensively in the Canary Islands for shipment to England. With fertilizer and cultivation, it produces large bunches of fruit, weighing up to 125 pounds, 200 to 250 bananas of excellent flavor. As Cavendish is low-growing, six to ten feet on different soils, it resists high winds. It is one of the hardiest varieties, resisting the coldest weather known in south Florida, even though the top be frozen down.

The Hart is also known as the Lady-finger, Golden Early, and Hart's Choice. It bears large bunches, but is taller and more tropical looking than the Cavendish, has a shell-pink color on the trunk and leaf stems, and is very ornamental. It is hardy, stands cool weather and is exceptionally fine in flavor, the preference of the Floridian for eating.

The Orinoco, sometimes called "horse banana," has the largest fruit of any variety grown in Florida, with a flavor equal to the imported, and is the tallest and most majestic, with the exception of the Giant Abyssinian, which is a magnificient ornament, but even in the tropics does not bear good fruit.

Already the plant breeder has begun to develop improved strains of the varieties suited to Florida, and they can undoubtedly be made to meet any market standard by selection and crossing.

The common yellow banana of the fruitstand is a variety called variously the Martinique, Yellow Jamaica, Honduras, South American and Gros Michel. It has a thicker skin than the varieties being developed commercially in Florida, and is not so tender or delicately flavored, being best adapted for picking green and shipping long distances. It is grown successfully in Florida.

The red banana of the fruit-stand is Red Jamaica, well known and purchased at a premium for its superior flavor—it is also grown to a limited extent in Florida.

"The banana has languished in Florida because it did not get enough to eat," says Mr. Bolles. "It is an amazing feeder, and when fertilized and cultivated, produces bunches here in Florida that are as large as any grown in the tropics, and a tonnage per acre that exceeds tropical yield. This is due to the fact that tropical bananas, not being fertilized or cultivated, must be planted at considerable distances, whereas in Florida we plant close, 400 to as many as 600 plants to the acre. Improved Cavendish bananas have been harvested here nine months after planting, in bunches with 350 bananas, 16 "hands" or clusters, weighing 125 pounds. Florida's cool winters tend to kill or check the blights and parasites that hamper tropical banana plantations, and even threaten their extinction. With this natural advantage, and extensive cultivation, the Florida banana planters can afford to spend from $100 an acre upward yearly in fertilizers and mulch material."

In setting out a banana plantation, holes 2½ feet in depth and diameter are dug, filled within 10 inches of the top with manure or fertilizer and top soil and the bulb is then set in and the hole filled to the top. Bananas can be planted any month of the year, though bunches ripen faster in the spring and summer. Almost anything obtainable in the way of fertilizer is a welcome item in the banana's bill of fare—the nitrate, potash and phosphate in chemical fertilizer, the by-products of industry like packing-house tankage, cotton seed meal, fish offal and castor pomace, the manure from horse stables, cow barns, sheep folds and poultry yards, and everything in the way of vegetable trash, from grass and soil to the leaves and stems of the banana plants themselves. Many kinds of soil are suited to this fruit, particularly Florida soil not adapted to oranges or grapefruit, but generally it thrives best on rich muck or loam, requiring abundant moisture, but also drainage for protection against drowning out in heavy rains and overflows.

To date about 3,000 acres of bananas are growing commercially in Florida, and there will be a crop to market next year through the growers' association which has been organized to deal with the infant industry's marketing problems in advance. However, Florida itself imports so many bunches of bananas from the tropics that it will be several years before markets need be sought outside the state. When that time comes, Florida will have advantages in competition with the tropics, being nearer many of the large northern and eastern consuming centers, and able to ship fruit ripened on the plant, or more nearly ripened than the bananas that come from the furthest boundaries of the Caribbean.

In fact, those who have been most active in encouraging this new industry, quote figures that are striking. An acre of bananas grown on the intensive system should bear within 12 months after planting, and records for the past 30 years show that 10 crops can be expected within 12 years. Bunches of 35 to 50 pounds are satisfactory, though larger ones can be raised. With 400 plants to the acre, each bearing a 50-pound bunch, the gross revenue is $1000 an acre. Cost of cultivation, fertilizer and harvesting is from $250 to $300 an acre, leaving a net profit of $700 to $750—and these are by no means the highest yields or prices.

However, while the writer does not wish to dampen honest enthusiasm or cast reflections upon anybody, considerable experience with new specialty crops has taught him this:

The kind of men who first discover such possibilities must be enthusiasts as well as experimenters. The enthusiasm necessary to start an industry in the face of scepticism and discouragement is likely to be superabundant, over-optimistic. Such enthusiasm is communicative, and fires others who would rather believe rosy prospects than investigate them. Thus, there usually comes a time before the industry is strongly established when a boom develops and is followed by a setback and reconstruction on a sounder basis.

This may not be happening in Florida. The possibilities for a successful banana growing industry there seem very good. But this industry is still under school age. Therefore, any interest in it aroused by this article must be counterbalanced with the conservative admonition, "Watch your step!"

Chicks should have plenty of fresh water; use sanitary vessels and keep shaded. Foul, impure water kills more chicks than any other cause.

Should Avoid Unfavorable Publicity

"Florida has lost millions of dollars during the last year, all of which came out of the pockets of the citrus growers, because of inability to keep its own counsel," according to Frank L. Skelly, manager of the American Fruit Growers, Inc. Mr. Skelly referred to the unfavorable publicity given to Florida last season in northern newspapers and in the trade papers of the fruit trade, relating firstly to the shipment of immature fruit, and secondly to the general situation of Florida citrus fruits in the markets. He said that notwithstanding the fact that other shipping sections had been troubled by failure to control shipments of immature fruit and that other citrus areas outside of Florida had suffered equally greatly with respect to prices received during the past season, that it was notable they were able to avoid getting into the trade papers and into the northern papers. On the other hand, column after column of news matter was devoted to the serious situation in Florida.

Mr. Skelly pointed out the way to avoid this unprofitable notoriety is to minimize the printed publicity given to such matters here in Florida. Where the local papers are furnished liberally with matters of this nature by some more or less prominently identified with the industry it is inevitable, he says, that such matter will be taken up by the trade press and in turn find its way into newspapers reaching the public in the consuming markets.

"As I have said before, you could not hope to build a fish industry by crying 'rotten fish.' You can no more hope to upbuild and strengthen the citrus industry by following the same methods." These remarks were in connection with the meeting in Orlando recently of packing house managers and field representatives of the American Fruit Growers Inc., from various portions of the state, held at the Angebilt Hotel. The meeting was for the purpose of hearing reports from various sections, discussing packing problems and perfecting arrangements looking toward marketing next season's crop. While definite figures were not given, it is said that a summary of reports from all sections establishes that the Florida citrus crop for the coming season will be substantially smaller than that of the past season. It is also said that the reports indicate a very considerable increase in tonnage for the American Fruit Growers Inc. No changes will be made in the fundamental methods of marketing employed by the organization, though plans were laid before those present which had been worked out by sales experts for departures which it is confidently expected will materially aid in better merchandising of the oranges and grapefruit handled by the organization. Advertising plans for the coming season also have been worked out carefully but involve no new departures. As heretofore chief reliance will be placed on space in newspapers published in the consuming sections. According to the experts in charge of this phase of activities, the American Fruit Growers Inc., has definitely determined for itself that newspaper advertising produces the largest sale for their products at lowest advertising costs.

Each person present participated actively in the meeting and contributed to the discussions. The meeting was followed by a luncheon given at the San Juan Hotel. The spirit of the meeting was entirely optimistic. Officials and employees of the American Fruit Growers Inc., are looking forward to an era of generally satisfactory prices, and to a continued improvement in the methods of marketing Florida oranges and grapefruit based upon a deeper and more intensive study in the finer problems of distribution involved in handling larger crops as time passes.

Among those present were: J. A. Haistens, Cocoa; H. A. Pollard, Haines City; T. S. Kirby, Fort Pierce; E. L. Haskins, A. R. Klemm, Winter Haven; S. D. Gaines, Vero; E. A. Springstead, R. S. Campbell, T. A. Howse, Palmetto; Geo. Baas, E. B. Lytle, Weirsdale; W. J. Merrill, Lakeland; R. M. Kirkland, Crescent City; W. T. DuPree, Citra; Geo. Guthrie, Maitland; L. L. Chandler, Goulds; R. H. Rice, Cocoanut Grove; W. L. Story, Lake Jem; F. L. Skelly, Frank Kay Anderson, Bruce Floyd, G. B. Hurlburt, A. S. Derby, G. D. Wing, J. R. Crenshaw, Orlando.

EARLY LEMONS, LIMES ON SAN BENTIO MARKET

SAN BENITO, Texas.—Lemons and limes of this season's growth are now on sale by the local grocery stores. This is early for the fruit. Both the lemons and limes are green, but when cut open are very juicy and make excellent lemonade and limeade. "We grow it first" is justly true of the San Benito district.

Did you ever try getting along without the home-town newspaper? Not much of a get-along, is it?

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Says Freeze Benefit to Industry

By R. Iderstine, Daphne, Ala.

It may seem paradoxical to state the freeze of January last was a blessing in disguise. But, I consider it in that light to a very great extent at least. To arrive at this conclusion one must avoid sentiment, and stare the facts in the face.

I believe it is safe to state that 80 per cent of the trees killed in the older groves by the freeze were pest ridden. Purple Scale and White Fly having gained such headway that the cost of spraying added to the loss because of low price received for inferior fruit had become an enormous item against which the grower had to continually fight.

Of course no one likes to lose what he has, and there seems always to develop a sentiment which attaches closer and closer to the sickly thing that we try to save and, when death does come the shock is in proportion to the effort to save.

However the Growers of this section are rallying wonderfully well, and are to be complimented on their optimism. They know the past, and cold hard logic has given them a basis upon which they can stand and visualize success in the future. The situation possesses merit and in this case the remedy accompanies the ill. In the future we need have no fear from such freezes as we had last January.

The loss to the Satsuma growers in Baldwin County will I believe approximate 40 per cent (I had thought to compile this data before writing you, but I have not had the time) and in view of the fact that the trees in the groves that were infested with Purple Scale are all dead, the sentiment expressed is that, "it is a good thing."

This is true for we can now keep under control the Purple Scale and White Fly at a very small cost, and thereby double the sale price of fruit.

The growers are planning and preparing to block out the older trees rather than reset with younger trees in the old grove. Then set out the vacant space with young trees.

It is not generally believed to be good practice where trees five years and older are sprouting out from the bottom to try and make a tree of them, because of lack of compensation, and, because of danger of decay of old trees before healing is complete.

Trees under five years old and sprouting from the bottom, it is thought can be saved if the growth is vigorous and all the sprouts are allowed to grow, so that compensation may take place and healing be complete before decay sets in.

It would be safe procedure if sterilization and protection of the wound were entirely automatic, but when the human equatio nenters into the matter, resulis are problematical.

A great many of the growers planted their trees with the union 4 to 6 inches below the surface, some banked their trees, and where the trees had the dirt worked to them so that the union was covered saved 95 per cent of their trees. And in the one and two year old trees some of these may have died from other causes.

When we consider the results of banking, also that 90 per cent of the older trees that were killed, received practically no damage to the tops, or in other words, 90 per cent of the old trees that were killed came out in leaf and blossom and then died back because injured at the trunk, suggests, that if we grow a one trunk tree headed out about two feet high, that this trunk could be protected economically by a simple thermostatic preparation in sheet form that could be wrapped around the trunk two feet high, and the tree saved.

Give us two or three years to grow trees on the basis of the experience gained this year, and we will extend an invitation to any old freeze that may be rambling around the country to pay us a call and test our faith and judgment. We have saved by our loss.

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Satsuma Growers Optimistic Over Next Year's Crop

Satsuma growers are fast becoming optimistic over prospects of a good crop next year and are planting additional trees, notwithstanding the fact it is generally conceded the 1924 crop will be barely sufficient to supply the local market, according to reports submitted at the annual meeting of the Gulf Coast Citrus Exchange in Mobile. At the meeting officers were elected and the general subject of interest to growers—damage to the groves by the blizzard of last January—was discussed.

Leaders in the industry in the Satsuma belt are expecting little returns this fall, but reports from each district indicate the trees are responding to the good care and that a large crop will be grown in 1925. Many growers are preparing to replant the groves which were wiped out by the blizzard, and many are planning additional acreage, it was stated.

The growers are reported by leaders to be regaining the optimism which prevailed before the blizzard, although the loss is admitted to be considerably larger than first estimates. The estimates of loss were made before the arrival of the summer months, and at a time when it was believed the trees would "come out" with the arrival of sunshine.

General optimism results from the fact that the trees are responding to the attention and treatment being given them, it was stated at the exchange meeting. It has been the experience of fruit growers that severe freezes come every 20 years and preparations were reported as being made at this early time to go through such an emergency 20 years from the last freeze.

Directors from each district and the manager of the exchange, Dr. O. F. E. Winberg, reported 1923 a most successful season, notwithstanding the fact that exchange had to ship into flooded markets. The Satsuma crop of the gulf coast was reported later last year while the crop in Florida came in earlier. Independent shippers were reported to have flooded the markets, and the Satsuma came into stiff competition with the fruit of Florida, it was reported.

Manager Winberg reported "full settlement" to the growers early in February. The average return on all sizes of No. 1 oranges was $1.46 per box, No. 2, $1.08 per box, and No. 3, 78 cents per box. Growers of Florida fruit were reported to have sustained losses, while growers of the Satsuma in this section received good returns.

The exchange paid $133,733.19 for freight express, reports showed. Other of the large items of expense, which the growers shared as members of the cooperative exchange, were: Boxes, $40,137; nails, $3,324; paper wraps for oranges, $18,381; advertising, $10,006.

The exchange members elected the following officers for another year: Dr. O. F. E. Winberg, president; W. H. Reynalds, vice-president; Colin MacDonald, secretary; Merchants Bank, treasurer; J. H. Webb, attorney. Directors, each representing a separate districts are: Dr. Winberg, Mr. Reynalds, L. L. Noble, Dr. F. T. Nye, A. M. Troyer, F. L. Sanford, George Jackson. There is one vacancy, caused by the death of Dr. W. H. Ludewig of Foley.

The exchange passed resolutions on the death of Dr. Ludewig, pioneer in the industry and Miss Octavia Sauer, who was in charge of the office of the exchange.

FERTILIZE NOW TO KEEP LAWNS HEALTHY AFTER SHOWERS STOP

Do you know that four to six pounds of nitrate of soda or sulphate of ammonia to every 1000 square feet of space will keep your lawn from turning yellow and showing an unthrifty condition during the dry, hot weather that is to follow this wet season. Though the lawns are looking healthy now they will not hold up after the rains stop.

W. E. Stokes, grass and forage crops specialist of the Florida Experiment Station, who makes this statement, says that in applying the fertilizer all lumps should be broken up and the material scattered evenly over the lawn, and if a shower does not immediately follow the sprinkler should be turned on, so as to thoroughly wash the fertilizer off the grass down into the soil and prevent scorching or burning.

If nitrate of soda or sulphate of ammonia is not available eight to twelve pounds of cottonseed meal to 1000 square feet of space has been found to give good results. Care must also be exercised to get this material off the grass blades. Probably the best way to do this is to brush or sweep the lawn with a broom after applying the cotton seed meal, and before any watering is done.

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Citrus Fruit Acreage Increasing; 100,000 Acres Texas Valley Land Available

Each year sees an increase in the number of citrus fruit trees planted in the Rio Grande Valley. The Valley grapefruit is recognized in all markets to be of superior quality. Government experts have estimated that fully 100,000 acres of Valley land is admirably suited to citrus culture. Approximately 28,000 acres of citrus fruit have been planted. Citrus orchards set out ten years ago have been bringing their owners an annual per acre return of $900 for the past five-year period.

One of the most complete citrus fruit packing plants in the United States has been constructed and placed in operation at Mission, the home of Valley grapefruit. This is the first of a chain of thirteen plants which will be built in the different Valley towns. The concern has its plant No. 2 in operation at Harlingen at this time.

Comparative records of the United States weather bureau show that the climate of the Valley is the most equable in the United States. The temperature is high in winter because of its sub-tropical location. It is low in summer because of cooling gulf breezes.

Most Equable Climate

The mean temperature of August, the hottest month, is 86 degrees, while that of January, the coldest month, is 58 degrees. Less freezing or frost temperature is experienced in the Valley than at any other point in the United States. During the past winter it was not necessary to light the smudge pots in the orchards.

The citrus industry is becoming the leading industry in the Valley both because of the high return on the investment and also because men of middle age long for the sure and easy returns which a citrus orchard gives and its pleasant and delightful surroundings. Each year sees a growing number of men from northern states coming into the Valley and buying small tracts upon which they set out a citrus orchard and build a winter home. They find that a few thousand dollars thus invested is certain to bring them a good rate of interest and supply them without cost with a home for the winter months.

Citrus Profits Large

The following figures are reliable: Trees four years old average a return of $200 per acre; five to six years old, $400 per acre; six to seven years old, $600 per acre; eight to nine years old, $700 per acre; ten to eleven years old, $1,000 per acre, and a full grown orchard fifteen years old will average $2,000 per acre. The trees will live almost indefinitely if proper care is taken of them. The first orange tree planted in California stands near Riverside, is over sixty years old and producing fruit in great abundance.

Oranges, lemons and limes thrive here as well as grapefruit although the grapefruit industry has been most largely developed. The average per capita per annum consumption of grapefruit is four. This indicates a possible market of almost unlimited proportions—a guarantee of the permanency of the industry.

The development of the Rio Grande Valley has naturally caused a transportation problem to arise. The Gulf Coast lines, the one railroad entering the Valley, has given excellent service in recent years, and the development of a harbor at Point Isabel, where dredges are now at work excavating a channel from the gulf to the pier of the Rio Grande railway, will provide the Valley with a water outlet and water rates on a large part of its products to northern and eastern markets, with a corresponding reduction on incoming freight.

BIG CITRUS ORCHARD TO BE PLANTED AT LA FERIA

HARLINGEN, Texas. Citrus plantings covering 120 acres will be made in the La Feria district during the next few weeks on land recently purchased by residents of Indiana and which will be in charge of C. M. Adams, who arrived this week from Indiana. Mr. Adams has had experience in citrus growing in California and will have charge of the setting and care of the orchards.

The cows of the state offer the best market for grass and forage crops that we have. She is the "middleman" to handle these crops and convert them into a marketable product.

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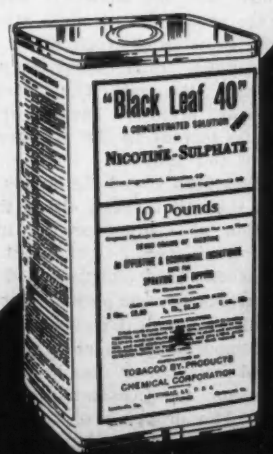

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40% Nicotine

Humus, Nitrogen and Gypsum, and Their Relation to the Modern Orchard

By Professor George A. Olsen

It is generally well known that fruit contains only very small percentages of plant food. But when the total amount contained in the fruit raised on an acre of land is considered it is observed that there is as much or more of the various elements found in other agricultural crops.

Another factor which makes for soil depletion of plant food is that of cultivation. The more thoroughly the soil is cultivated the more rapid is the reduction of the organic matter and with it the nitrogen content. Snyder of Minnesota and Ladd of North Dakota, find that the continuous cultivation of wheat reduces both the humus and the nitrogen content of the soil. In an eight year study, Snyder noted a loss of 1400 pounds of nitrogen per acre. Only three hundred and fifty pounds of nitrogen were utilized by the crop. The loss of humus for the same period was estimated at eight tons per acre.

The orchardists do not determine losses of plant food but their methods of observation convinces them that the custom of cultivating the soil and maintaining a thick mulch in order to prevent the loss of moisture has changed the physical condition of the soil. In the orchard sections where the soils have become compact and light in color much of the humus has been lost and the nitrogen content lowered.

Other indications that the soils are rapidly being depleted of valuable plant constituents are production of smaller sized fruit or less fruit and in many cases imperfect or lopsided fruit. Transverse sections of the fruit clearly show imperfect seed development and this is one of the best indices to show that the supply of plant food is inadequate.

Lowering the organic content of the soil has a corresponding effect on mineral plant food. Thus where the soil contains considerable organic matter much plant food is rendered available, while the opposite conditions prevail in soil of low organic content.

Recognizing as we should that cultivation tends to reduce the organic content of the soil it is admitted nevertheless that cultivation is indispensable since one of its primary functions is to conserve moisture. Simultaneously the plant food continues in solution with the added advantage of being well distributed. Cultivation should therefore be continued but with it an effort should be made to keep up the supply of organic matter.

The organic matter can be maintained with the use of barn-manure. Unfortunately the supply of barn manure is too limited to be of any general value, and those who have been fortunate enough to procure manure have had to buy a large quantity of it at rather high prices. Of the various forms of manure which have been used, sheep guano has been in great demand. In a number of instances the sheep manure has been received in a fermentable state and in other cases the manure has been fire fanged. In regard to the latter product, very little, if any, organic matter and nitrogen remains. Fermentable manures are in the stages of decomposition. Simultaneously the nitrogen materials are rapidly being converted into ammonium carbonate, a form of nitrogen which quickly escapes into the air.

Those who buy the manures on the basis of fertilizer values are apt to pay for nitrogen which is lost in transit. Owing to this possibility it has been recommended that the sheep men apply agricultural gypsum to manure which accumulates in the corrals. At least the agricultural gypsum should be mixed with manure before it is shipped owing to its sulphate sulphur which readily unites with the ammonia and thereby prevents the loss of nitrogen.

Those who are unable to purchase manure should devote more attention to the growing of crops which when turned under will increase the numus content of the soil. The various legumes are preferred because of their value in increasing the nitrogen content of the soil.

As has been stated the humus formed in the soil through either the application of manure or the turning under of greenstuff is of direct value in releasing the plant food tied up in the various soil complexes. Occasionally it is found that the supply of some important element is present in limited amounts. It may be the direct cause for unsuccessful growing of fruit. The dropping of fruit in the early stages of development is nature's method of adjusting itself to the conditions. It also indicates that the supply of plant food is not sufficient to meet the demands of the fruit.

In cases where there is a tendency for natural culling of fruit it is likely that the soil does not carry any too large amounts of certain elements which are required. There is also the possibility that it would be difficult to grow legumes in addition to the production of fruit. However, the plant food contained in the turned under legume is not lost and therefore should produce desirable effects. But in order to be assured that there is plenty of sulphate sulphur for both the legume and orchard trees it is advisable to apply agricultural gypsum at the rate of 200 to 300 pounds per acre. In many of the eastern and southern orchard lands it is also desirable to apply rock phosphate to the legume. With the turning under of the legume the phosphate is also turned under and in the course of time is rendered available for the trees.

The farmer who starts his feed-for-livestock crops early in the growing season is cooperating with nature; he lets them grow up with the summer, thus insuring the biggest possible returns.

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HOW TO SHIP YOUR PRODUCE TO GET BETTER PRICES

Continued from page 15

packs are in favor.

Pay particular attention to what is said about grade, pack, when and what to ship. Different markets have demand for different grades; Chicago, for instance, will pay 50 to 60 cents a hundred more for No. 1 potatoes than for No. 2.

When to ship is important because usually the big markets are surrounded by produce-growing sections, and unless you have some specialty you must beat the local goods to avoid terrific competition. You, paying high freight rates and other market expenses, are in no position to compete with produce which has been grown on nearby farms and hauled to market on a motor truck in a few hours.

Then, again, every market does not want the same thing. To illustrate this, let me point out to you that ordinarily yellow onions will outsell red onions by 25 to 50 per cent at Chicago, while the reverse is true at St. Louis.

If you are skeptical at all about your receiving the right price or want to know if your stuff reaches the market in proper shape, you can have an inspection made by a Department of Agriculture inspector if there is an office at the market. Merely write or wire before shipping, stating what you have and whom it is shipped to. The charge for this service varies—$4 for a carload of one kind and $2.50 for a half carload or less. Don't wait until after you receive your bill to ask for this inspection, because by this time the stuff may have been sold to some retailer, and with the identity lost, very little can be done.

While I have told you how to go about consigning small shipments of produce to the big markets, I think you will probably be farther ahead if you patronize your local market unless you are a large shipper. By this I mean to sell to a buyer or go to a retail merchant. You can afford to sell locally or at a nearby city at a lower price. Freight rates are high and refrigeration costs money. Stuff shipped in less than car lots takes much longer than a solid car to reach the market. However, you can get around this and get refrigeration service by shipping with neighbors or by patronizing a local cooperative association.

On the market small consignments don't receive the attention that car lots do. In the first place, there is a heavy handling charge, and buyers usually deal in large lots. Small shipments are sold to jobbers, peddlers, or perhaps retailers who do their own trading, and often four or five sales will be necessary to get rid of say ten sacks of potatoes.

Florida grapes have attracted attention. Northern brokers have been in Florida contracting for future crops. Florida's grape acreage, as yet, is not large, but interest is being stimulated and it is thought that with a ready market available the acreage will increase remarkably.

Are the people of your community industrious and progressive enough to, not only be interested in better farming, better schools, and better roads, but also willing to sacrifice their time and money to get these improvements.

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RAJKOT, India.

THE FLORIDA CITRUS INDUSTRY

Continued from page 9

citrus industry is no exception. No doubt, as we work back to good and profitable prices and the market reports show the nice profits being realized by the citrus growers, we will again experience a period of renewed citrus planting. That, however, is a natural result and need not cause worry provided at that time the setting out of new groves is gradual and not overdone during any one or few years.

Now, just a few words in connection with prospects for next season. Advices from California are that while it is yet too early to form definite estimates, it is probable that the citrus crop will be lighter than this season. As a rule in California, a light crop follows a heavy one. One of our California correspondents writes that he is betting on a lighter crop of oranges next season and larger sizes. We know that California oranges have run every small this season and that figuring on a basis of the single orange, a box of Californias has averaged about twice as many oranges this season as was the case last year when sizes ran large. Therefore, even if California ships just as many boxes next season as it does this year, it will ship around one-fourth to one-third less oranges if sizes are normal or perhaps only half as many oranges if sizes run large.

The history of the fruit business shows that often in the past a year of large crops and low prices has been followed by a year of good prices even with practically as great a supply. During a year of light supplies and high prices, distribution and consumer demand are necessarily curtailed. On the other hand, during a year of large crops and low prices, distribution is wide and consumer demand is general and heavy. The result is, that following a year of low prices we begin the new season with a heavy consumer demand already created. We can hope that this will be the case the coming season—that the consumer demand will be unusually heavy for both oranges and grapefruit and that at least reasonably good prices will prevail.

I would like also to say a few words in connection with the shipment of immature fruit. In doing so, I hope you will pardon me for referring to the organization with which I am connected—Chase & Company. It is necessary in order to bring out the point I desire to make. In the old days, Chase & Company began the grapefruit season by shipping fruit which showed at least 50 per cent color on the trees with the juice cells well filled. The cars in which this fruit was shipped usually went forward with plugs in and vents closed and the fruit took on some additional color enroute. When this fruit was displayed by the retailer and reached the consumer, it showed say from 1-3 to 1-2 green or greenish color. The consumers, not having had the privilege of eating grapefruit for some months, purchased these first shipments with their eyes open, knowing that the fruit was not fully colored and not as well matured as it would be later.

After operating about a week on grapefruit showing at least 50 per cent color on the trees, our color limit would be raised to 2-3 or more color. In another week or two the limit would be raised to 3-4 color on the trees, and the next picking instructions would call for full or practically full color. Consequently, the fruit placed before the consumer from day to day showed gradual improvement. In all cases picking instructions specified that juice cells must be well filled.

The point I desire to make is that the consumers were not cheated. They knew what they were buying. This season, however, grapefruit which in some cases showed absolutely no color on the trees and in which the juice cells were not filled, was gassed and went forward showing a beautiful yellow color—a deceiving color.

The consumers buying this fruit, did not do so with their eyes open, knowing that they were purchasing fruit which had not reached its prime. The result was that they were disappointed, dissatisfied, felt cheated and many were through with grapefruit until much later in the season when the grapefruit was mature beyond the question.

I hope plans now being considered by the Fruitman's Club, which numbers among its members the Florida Citrus Exchange and most of the independent shippers, can be consummated so that the Federal Government will place inspectors in all packing houses.

However, to make a success of any law, rule, regulation or gentlemen's agreement covering the shipment of immature fruit, it is going to be necessary to have public opinion in Florida strongly and absolutely opposed to the shipment, either gassed or not gassed, of fruit which does not show fair and proper maturity.

GULF FERTILIZER COMPANY ENLARGES ORGANIZATION AND IMPROVES SHIPPING FACILITIES

Continued from page 18

and additions to their storage and shipping places. The plant at Tampa has been overhauled and improved, and the numerous Gulf warehouses throughout the state have been put into condition to receive large stocks of goods which are carried on hand for the convenience of Gulf customers.

Through the enlarged and improved organization, Mr. Woods will be able to give to a greater degree his personal attention to the business, and it is generally conceded that much of the Gulf success has been built upon the able efforts of its president. Mr. Woods extends to his friends and the public a cordial invitation to call and see him and meet the new members of the Gulf family.

BANANA GROWERS CONVENTION

Banana growers from all parts of Florida will attend the annual meeting of the Florida Banana Growers' Association in Winter Haven October 29. W. E. Bolles of Oldsmar, secretary, is mailing copies of "Commercial Banana Growing" free to all interested in this rapidly-growing food-fruit industry. About 500 will attend the convention. There were 400 at the last meeting in Bartow.

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on citrus, but they have further suggested that Flowers of Sulphur should be selected for best results. There are many different grades and qualities sold as "Dusting Sulphur" so that control of Rust Mites and Red Spiders will be governed by the particular brand or grade which you purchase.

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WHY SO MUCH POOR CITRUS FRUIT?

Continued from page 8

and capacity and has the necessary fall and outlet, is at best, but an opportunity, or foundation for installing a drainage system on each and every ten acres of the class of land of which I am writing, to-wit: flat pine or hammock underlaid with clay or marl at depths ranging from one to four feet or perhaps more.

With these views firmly fixed in my mind, two years ago, through our County Agent, Alfred Warren, we had Professor H. S. Hiatt of the Gainesville University and Professor E. F. DeBusk, who at that time was County Agent of Lake County, but who is now connected with the Department at Gainesville, both experts on grove conditions, to spend a day with us at White City and inspect some of the groves that were showing the most deterioration, as well as some less affected. An examination developed the conclusion that lack of drainage was the fundamental cause of most of the trouble from which we were suffering. This applied particularly to groves ten years and older and where the root system had penetrated to a depth which had reached the undrained water, being frequently from one to two feet, at which point it was found that the lateral or feeding roots within twelve inches of the top of the surface were rotted off from water logging, and a later investigation showed that the tap roots were dead, or practically so, within a foot or two of the top of the surface.

As stated, this condition applies to the older groves, but when we take into consideration that an orange tree will put down a tap root three feet in length in less than three years, if it has ANYWHERE IT CAN GO, and that feeding roots will occupy the ground to a depth of two feet in the same length of time, we see the necessity of having more than one foot of drained soil for them to function in.

There are of course thousands of acres of land in Florida on which citrus fruits are grown that require no drainage at all, and this fact has induced thousands of people to follow the lines of the least resistance, and plant groves where drainage is not a necessity, but in doing so, they often sacrifice soil quality, which ultimately means, fruit quality and which brought down to its final analysis, is the determining factor between profit and loss.

I do not wish to be understood as claiming that simply because land does not need drainage, that it is not good citrus land, for every informed person knows to the contrary, but the point that I am making is, that some of the finest citrus land in the State, lands lying west of the Indian River from the North line of St. Lucie County to the Southern terminus of the County, needs more drainage than has ever been given it, if we hope for permanent groves, and it is becoming more apparent every year that a profitable, enduring grove is too expensive an investment to warrant one in neglecting the fundamentals upon which success depends.

The fact that Drainage Districts are being created and put into operation all along the East Coast, emphasizes my position as to the necessity for drainage, but as already stated, this wholesale, or abstract drainage, is NOT DRAINAGE that insures or justifizes the citizen in planting a citrus grove or engaging in the growing of any kind of crops until he has supplemented it with individual drainage on the specific tract of land he wishes to develop.

When I speak of the root system having been damaged to within one or two feet of the surface of the soil, I wish to say that in many instances that it was where the normal water table was from four to eight feet below, but with the heavy clay near the top, which is of extremely close texture, water could not reach its normal level by going down, and as a result remained close to the surface until the damage was done.

It is probably true that if normal rainfall could be assured, that a limited amount of individual drainage, supplemental to the drainage done by the Districts would suffice for practical purposes, but during the year of 1923 and in previous years, on lands generally conceded to be pretty thoroughly drained, very material damage to some of the older groves was done, and thousands of acres of younger groves poorly drained, suffered serious damage also, a damage no doubt greater than the cost would have been for drainage which would have prevented what is in reality a great, and in some instances, an irreparable loss.

This being true, the man who contemplates buying, need not hesitate to buy land that is at times very wet provided, th esoil is good, and particularly, if it is extra good, but he should be convinced that it can be drained, and he should not delude himself with the idea that because it is within a drainage district, that it is drained, for if he does, he is doomed to disappointment and ultimate loss, unless he supplements same with additional drainage of his own.

There are numerous other reasons for poor fruit, but as applied to the class of soil in question, drainage is a fundamental factor, for when that is perfected, many of the other reasons will not exist, for the primary cause will have been eliminated, for lack of drainage positively prevents the development of a healthy tree, for an unhealthy tree, resulting from a lack of drainage, not only cannot produce first class fruit, but invites and causes other diseases, which trees on properly drained lands are not subject to in any marked degree.

With the drainage taken care of, there are of course the details of proper selection of root stock, planting, fertilizing, spraying, etc.,, all of which are important—proper fertilization perhaps being the next in importance to thorough drainage, and calls for one's best judgement and care—spraying is an easy matter, as we have both the United States and State Departments to guide us—one of the main troubles being, however, that many ignore the advice and instructions which we pay good money to have furnished to us.

Believing as I do that imperfect drainage is responsible for most of the unfavorable grove conditions throughout the Section and on the class of land of which I have written, and also for many of the minor diseases as a result thereof, I shall not, at least in this article, go into any of the other causes for poor fruit, for I am a firm believer in performing the MAJOR OPERATION FIRST, and in this way, give nature a chance, for I have seen many growers going mournfully around looking up at the tops of diseased citrus trees, when what they needed primarily, was a good spade and some drain tile.

It may hurt your pride and offend your dignity to shake hands with an able bodied spade in digging some needed ditches and putting in some drains, but the results will more than compensate for the humiliation—TRY IT.

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31x4	16.35	14.30	12.00
32x4	18.00	15.75	12.60
33x4	18.50	16.25	12.90
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THE SOLAR PROPAGATING FRAME FOR ROOTING CITRUS AND OTHER SUBTROPICAL PLANTS.

Continued from page 7

rather tender tip cuttings cut with a "heel," that is, a small piece of the bark and cambium layer of the branch giving rise to the tip shoot.

As yet no success has been attained in attempts to root the mango from cuttings.

Temperature Records.

It will be noted by referring to Figure 2 that a recording thermometer was placed in the rooting frame, giving an accurate record of conditions during the experiment. This instrument recorded on a single sheet both the air temeperature in the frame and soil temperature at a depth of about 4 inches, i. e., about the depth at which the cuttings were inserted.

In addition to these recorded temperatures a maximum and minimum thermometer was placed on the ground in the shade under the rooting frame. Still another thermometer was laid on the surface of the soil in the rooting frame, partially hidden by the foliage of the cuttings.

The records for four weeks and four days (June 28 to July 30) showed an air maximum of 104 degrees and air minimum of 65 degrees F.; the maximum and minimum for the soil (occurring on the same dates, July 6 and June 30) were, respectively, 93 degrees and 64 degrees F. Figure 6 presents the curves for a typical week in July, the heavy line showing the air temeperature in the rooting frame and the light line the soil temperature. The maximum temperature shown by the thermometer under the rooting frame (in the shade) was 122 degrees, the daily maximum usually exceeding 110 degrees F. whenever there was an average proportion of sunshine.

The thermometer laid on the surface of the rooting bed showed a surprising difference between the temperature of the moist sandy surface and the air temperature recorded on the chart. The surface of the bed was usually from 5 to 10 degrees cooler than the air temperature, doubtless owing to the evaporation going on.

Taking this factor into account it became apparent that while the air temperature recorded on the chart averaged during the daylight hours from 5 to 10 degrees higher than the soil temperature, the actual conditions in the rooting soil were such that the surface was usually slightly cooler than the bottom of the bed, a condition much to be desired. During the night the curves representing the air and soil temperatures gradually approached and finally coincided or nearly so.

It is probable that a certain amount of temperature variation is not harmful and may even be beneficial, provided the range is not too great or the change too sudden. The latitude that can be permitted without detriment will vary considerably even for different species and varieties of closely related plants.

Several consecutive days of cloudy weather without sunshine occurring during the initial test seem to have produced no harmful effect, although a protracted period of such weather would probably be harmful, particularly if accompanied by a relatively low temperature.

Storage of Heat.

After removing the first lot of rooted cuttings (July 30), a second series, including a few other varieties, was immediately started, no change being made in the equipment at this time.

As late August is usually attended with several chilly nights, it was decided at the end of the third week to guard against too violent a drop of temperature at night. As one form of protection pieces of burlap were laid over the glass at night. Further protection was given by placing additional pans of water under the glass exposed to the sun's rays. Three pans of 3-inch depth, about 36 by 16 inches in size, holding about 20 gallons of water, were used. These were painted with lampblack. It was found that the moisture given off by this exposed water surface was too great, saturating the rooting bed in a short time; so covers were placed over them on the second day. Two pans were provided with metal covers painted black and one with clear glass and the temperatures compared under these conditions. As was to have been expected, the water under the glass in full sunlight became somewhat warmer (on the average 4 to 5 degrees F.), though the difference between the glass and the metal covers was not great enough to be of critical importance in storing heat for the night hours. As anticipated, a cool spell occurred soon after installing the water pans, with minima for three nights of 56, 52 and 53 degrees F., respectively (August 22 to 24).

The heat stored up during the day in the water pans had an evident effect in reducing the drop at night, and the cuttings suffered no apparent check during this chilling period. The soil temeperatures recorded were from 6 to 10 degrees higher than the outside air temeperature, and the lowest degree of soil temeperature reached was only of short duration, just before daylight.

Second Test in Rooting Citrus Cuttings.

Table 2 presents the result of the second test, using six varieties of citrus.

Table 2.—Results obtained by using a solar propagating frame for rooting six varieties of citrus cuttings tested at Washington, D. C., Aug. 2-30, 1923.

C. P. B. No.	Variety	Number of cuttings			Rooted, per cent
		Calloused	Rooted	Not calloused	
11540-AE	Rusk citrange	4	21		84
48010-T	Thomasville citrangequat	15	6	4	24
1158	Sweet lemon		26		100
11868	Rough lemon		25		100
11338	Cleopatra mandarin	6	7	11	29
11298	Kansu orange	2	23		92
	Total	27	108	15	

As found in the first test, additional time is required to root the citrangequat and the Cleopatra mandarin.

Suggested Modifications of Apparatus.

The Astrophysical Observatory of the Smithsonian Institution demonstrated in 1915 at Mount Wilson, Cal., the practicability of using solar heat for cooking purposes. The apparatus utilized a concave mirror surface rotating with the sun, which focused the sun's rays upon a pipe containing oil, the latter being connected with a tank located in an insulated oven. Temperatures up to 155 degrees C. (311 degrees F.) were obtained in such an oven, and sufficient heat was retained over night (88 to 90 degrees C., or 190 to 194 degrees F., at 6 o'clock a. m.) to continue cooking all night.

Such high temperatures are not necessary in plant-propagation work, though the demonstration mentioned shows the possibility of storing heat by properly designed and insulated reservoirs.

For practical use in plant propagation the cost of the equipment required to utilize solar heat must be kept down to a low figure. Some im-

provements in the present outfit have been made which, without adding to the cost, will increase the efficiency considerably, particularly with regard to storing heat over night. A double-glazed sash, 6 by 3 feet, placed on the south side of the rooting frame and giving an area about twice that of the latter has been substituted for the glass border surrounding the frame. This makes it possible to examine and handle the cuttings much more readily and would be a necessary arrangement in any commercial model. The double glazing leaving an air space of about one inch should prove effective in cutting off loss of heat by radiation. This is a fairly common design for winter use in northern greenhouses, but would only be necessary in relatively cool weather with a decided drop in temperature after sundown. The success of the first two lots of cuttings indicates that simple and inexpensive equipment will give excellent results where the climatic conditions are favorable.

The use of the solar propagating frame would be manifestly adapted to seasons of the year when sunny weather generally prevails, but is not necessarily limited to the hottest months of the year. In sunny climates, as in California and the Southwest as well as in portions of the Gulf Coast states, such a propagating bed, with slight modifications should be usable most of the year.

Summary

Propagation by the use of cuttings is often desirable and may be vitally necessary to utilize successfully seedless or few-seeded species, varieties, or hybrids of citrus and other subtropical plants.

With careful control of atmospheric humidity slender twig cuttings can be utilized, retaining the leaves in active condition. Such twigs are produced in abundance and make possible the rapid building up of a large stock of plants from single individuals, thus insuring a uniformity not found in seedlings.

Bottom heat is usually a prerequisite to the attainment of a high percentage of rooted plants from the cuttings. The usual method of obtaining bottom heat, that is, by the use of steam-heated greenhouses, is very satisfactory, but it is so expensive as to discourage the practice of rooting citrus cuttings on a commercial scale.

A rooting frame of simple construction which utilizes sunlight as a source of bottom heat has been found to give excellent results with the plants experimented with, including most of the standard citrus rootstocks as well as the newer hybrds.

The method is economical and offers considerable promise for other groups of plants, especially of subtropical character. The use of a solar rooting frame is obviously best adapted to the warmer sections of the country having a relatively large proportion of sunshine.

VALLEY TO LEARN CITRUS GROWING

Brownsville, Texas—Santa Rosa, a community in this county will send Henry Alsmeyer, teacher in vocational agriculture to California to study citrus methods in that state, for the benefit of his classes next year. This action was taken at a recent meeting of the school board of the Santa Rosa independent school district.

This action of the board sets a new precedent for educational work in the Valley.

Mr. Alsmeyer is a brother of Louis Alsmeyer, Cameron county agricultural agent.

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CAN'T USE FREIGHT CARS AS STORES

Continued from page 10

cations is the fact that our laws relating to interstate commerce require that the railroads shall show no discrimination between any shippers and no distinction between any receivers. The rule of "first come first served" does not apply. Therefore if at a certain destination point a receiver of a car of bulk fruit succeeds in having that car parked at a place which is most advantageous for his purpose, it must be remembered that each and every other possible receiver at that point at that same time or immediately thereafter is by the law entitled to all the same rights and privileges that the first has received. As the receivers of fruit in bulk have not been organized and have practically no mutual relations it was a foregone conclusion that there would be bickerings among some of them concerning locations for the parking of cars and that these bickerings would attract undue attention in transportation circles.

A second, and considerably more important complication comes about in the question of the detention of freight cars. The peak of the movement of any perishable business in almost every section of the country generally develops a car shortage at which times attention is strongly focused upon cars which may be held in any place for an undue length of time. The railroads feel they are furnishing freight equipment for the movement of freight and not for any other purpose. They do not feel that the penalties charged for holding cars are to be considered as rentals.

This view is strongly shared by the Interstate Commerce Commission which in connection with the so-called car peddling case recently declared itself on this subject in no uncertain language:

"We cannot, however, give our sanction to the view that the use of a car by a shipper as a place for vending its contents to the public is a service of transportation or a right that the carload shipper may demand of the carrier either at common law or under the act to regulate commerce. Nor are we able to accept the view that the 48 hours of free time, provided under the carriers' traffics to enable the shipper to unload the car embraces a right in the shipper to open a public shop in the car during the time, or that its further detention, under demurrage, for unloading or for any similar transportation service, subjects the car and the carriers' track and station grounds to use by the shipper as a place of business with the public. The suggestion that the acquiescence in the practice throughout a substantial period of years by the carriers in this limited section of the country, gives it the status of a transportation practice and confers upon the Commission the power, under section 15 of the act, to require its continuance on the theory that the withdrawal now of the privilege would be unreasonable, has no basis in reason or in authority. Transportation is a public service and its general scope has long been well defined and understood. It has never been considered to include any such use of a carrier's equipment and station property as is here asserted; and the mere toleration by the carriers through a period of years of such a use of their property affords no basis for a ruling that the practice has now grown into a shipper's right and a carrier's duty and is a transportation service."

It might be felt in some quarters that the action of the railroads and perhaps of the Interstate Commerce Commission had been stimulated by the regular fruit and produce handlers or commission merchants. Nothing, however, could be further from the facts. On the contrary what is known as the "Big Four," comprising The National League of Commission Merchants, the Western Fruit Jobbers' Association, the American Fruit and Vegetable Shippers Association, and the International Apple Shippers' Association, are opposing any move by the railroads to curtail the use of cars at destination points with all their power. In May 1924 these four big organizations by their executives submitted to the car service division of the American Railway Association a brief which strongly attacked any proposal to increase the penalties by which it was sought to provide to stimulate quick unloading.

The action of these associations, which represent practically all of the produce handlers and commission merchants of the United States as well as the more prominent shippers, is founded on the thought that if allowed to put such regulations into effect the railroads will not discriminate but will extend them to cover all fruits and vegetables. Watermelons, for instance, have never been packaged and if an indiscriminate penalization were permitted the commission men feel that their business probably would be hurt harder in the long run than would that of the itinerants receiving bulk fruit, as the total handlings of the latter actually are very inconsiderable compared to the total movement of fruits and vegetables in this country.

However, the language of the Interstate Commerce Commission in the car peddling case is so very definite and conclusive it seems safe to assume that the peak of the bulk fruit movement has been reached. The pressure which probably will be exerted undoubtedly will result in gradually diminishing the movement of fruits in bulk unless the consignees are in a position to receive them in one lot and promptly transport them to stores. Both the railroads and Uncle Sam feel it is inadvisable that the transportation agencies shall set any one up in the store keeping business; hence it is going to be up to bulk fruit receivers to rent store locations and not rely upon the use of railroad equipment for the display and sale of their wares.

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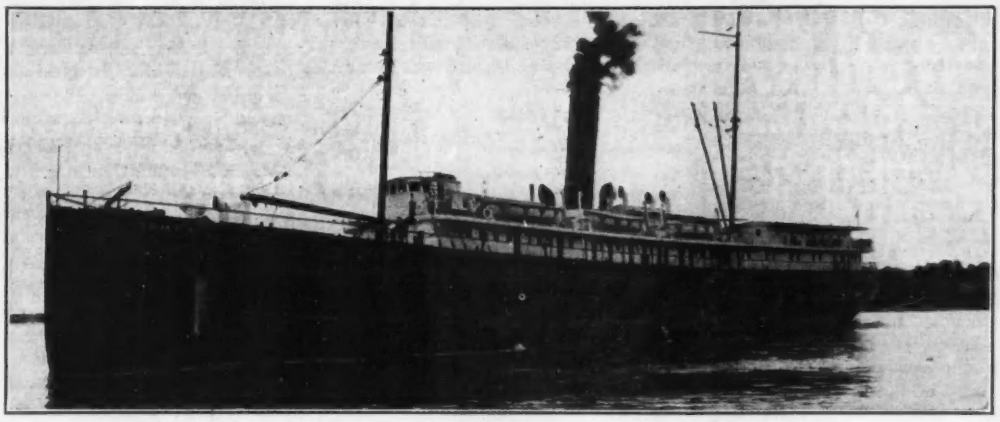

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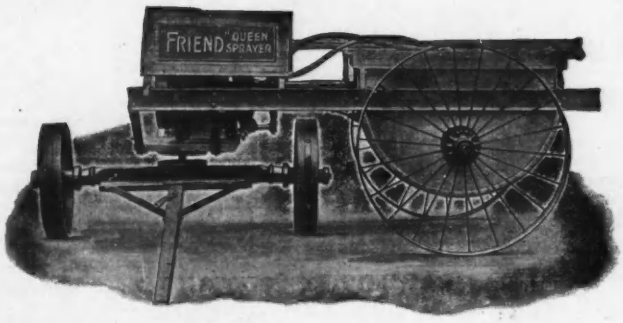

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Mobile county, which produces and markets the greater proportion of the crop, has nineteen packing houses, including those of the exchanges, shipping associations and large individual shippers, while in Baldwin county, with a very large acreage in the fruit, the orchards are so much concentrated that four large packing plants at the centers handle practically the entire crop, only small houses being required for such little acreage as lies outside those centers.

The fruit is taken from the tree with small clippers and deposited in a canvas bag from which the oranges are carefully poured into field boxes for carriage to the packing house. Injury by bruising is avoided by use of the bags and the care in emptying them. A field box holds in quantity almost enough oranges to fill two packed boxes, but the elimination of the culls changes this proportion somewhat. The satsuma is packed in what is officially known as a half strap, or one-half the capacity of the box capacity of the box used by the California and Florida shippers of other oranges. For a comparison of prices of the satsuma and other oranges, two boxes of the Mobile fruit compare with one of the other. When the Mobile man receives $3 for a box of satsumas and the quotation on California oranges is given at $5, the Mobile man is really getting $6 for the equivalent that pays the other but $5.

The first stage in gathering the fruit for market is the delivery of field boxes in the orchard, these being placed at points convenient for the pickers before they start work. As the fruit is placed in these field boxes the foreman checks over the pick from individual trees thus keeping tally that later is used to eliminate loafers or poor bearers.

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